United States Department of Agriculture

Appendices for the Final Environmental Impact Statement

Lake Tahoe Basin Management Unit

Forest Service

Pacific Southwest Region

R5-MB-293c
August 2015

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This document is the final revision of the Land Management Plan FEIS Appendices.

It incorporates the instructions from the pre-decisional objection period.

Cover photo:
View of Desolation Wilderness, looking north over Dick's Lake and Fontanillis Lake, with the lower Velmas on the far rght.

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Appendices for the FEIS for the Lake Tahoe Basin Management Unit Land Management Plan

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Appendix A: Forest Plan Monitoring and Evaluation Plan

This Appendix has been moved and is now Appendix A of the Land Management Plan.

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Appendix B:
Wild and Scenic River Inventory and Evaluation

Introduction

This FEIS and Land Management Plan were subject to the objection process under 36 CFR 219 Subpart B (2102). Because the project record documentation for the original inventory could not be located, the Objection Reviewing Official's instructions included completing and documenting a comprehensive evaluation and systematic inventory of the potential for rivers in the unit to be eligible for inclusion in the National Wild and Scenic Rivers System. This appendix fulfills that instruction.

River Inventory

The following inventory of rivers within the Lake Tahoe Basin Management Unit (LTBMU) was developed using the National Stream Inventory layer in the LTBMU Geographical Information System (GIS) database[1]. Each river in that layer was checked against the 7.5' Quadrangle topographic map (USDA Forest Service Publication R5-RG-172, 2011) to confirm that all named rivers were included in this inventory. One additional river (Eagle Creek) was added to the inventory even though it was not named in either the National Stream Inventory layer or the quadrangle topographic map. Each River is described by its unique identifier in the GIS database GNIS number) and GIS mileage.

Table B 1. LTBMU inventory of rivers

Stream Name	GNIS Number	National Forest Miles	Non-National Forest Miles	Total Miles
Angora Creek	26	2.38	1.46	3.84
Big Meadow Creek	21	4.21	0.01	4.23
Blackwood Creek	45	5.76	0.89	6.65
Bliss Creek	9	1.3	0.02	1.32
Burke Creek	22	2.71	0.76	3.48
Burton Creek	15	1.35	3.01	4.36
Cascade Creek	20	2.58	0.79	3.37
Cathedral Creek	4	0.96	0	0.96
Cold Creek	42	5.73	1.35	7.08
Dollar Creek	12	0.31	2.12	2.42

[1] The Friends of the River website was also checked to ensure that any rivers identified by that group were included in the eligibility evaluation. The only river listed for the LTBMU was the Upper Truckee River, which is already recommended for wild and scenic river status (Potential Wild & Scenic Rivers in California, September 2001).

Stream Name	GNIS Number	National Forest Miles	Non-National Forest Miles	Total Miles
Eagle Creek	29	3.06	0.34	3.4
Edgewood Creek	36	1.98	3.04	5.03
First Creek	9	0.77	1.04	1.82
General Creek	71	5.12	3.97	9.08
Glen Alpine Creek	30	3	0.49	3.49
Glenbrook Creek	25	3	0.87	3.87
Grass Lake Creek	19	4.38	0.02	4.4
Griff Creek	18	1.54	2.43	3.97
Heavenly Valley Creek	20	3.49	0.58	4.07
Incline Creek	30	3.4	1.47	4.87
Lincoln Creek	29	3.83	0.18	4.01
Logan House Creek	24	2.78	0.31	3.1
Madden Creek	16	0.79	1.98	2.78
Marlette Creek	11	1.33	0.44	1.78
McFaul Creek	43	3.62	1.21	4.83
McKinney Creek	15	3.11	0.85	3.96
Meeks Creek	45	6.44	0.02	6.46
Middle Fork Blackwood Creek	12	1.75	0	1.75
Mill Creek	16	0.05	1.55	1.6
North Canyon Creek	51	1.55	5.38	6.92
North Fork Blackwood Creek	12	1.88	0	1.88
North Logan House Creek	19	1.95	0.25	2.21
Rubicon Creek	11	0.8	1.04	1.84
Saxon Creek	47	6.45	0	6.45
Second Creek	9	1.21	1.24	2.45
Secret Harbor Creek	14	1.9	0.03	1.92
Tallac Creek	11	3.29	0.37	3.65
Taylor Creek	5	1.9	0	1.9
Third Creek	28	3.89	3.09	6.99
Trout Creek	63	8.64	3.76	12.39

Stream Name	GNIS Number	National Forest Miles	Non-National Forest Miles	Total Miles
Truckee River	32	0.56	3.28	3.84
Tunnel Creek	14	0.18	1.71	1.88
Upper Truckee River	141	13.22	10.1	23.31
Ward Creek	28	3.94	2.31	6.26
Watson Creek	10	2.64	0.53	3.17

As a result of public comment, eleven (11) tributaries of the Upper Truckee River were considered in the evaluation. The following table lists the tributaries by number and includes the mileage. A map of the tributaries is also included below.

Table B 2. Tributaries of the Upper Truckee River

Stream Name	National Forest Miles	Non-National Forest Miles	Total Miles
Tributary 1	0.69	0	0.69
Tributary 2	0.82	0	0.82
Tributary 3	1.52	0	1.52
Tributary 4	0.84	0	0.84
Tributary 5	2.31	0	2.31
Tributary 6	1.09	0	1.09
Tributary 7	1.51	0	1.51
Tributary 8	4.34	0	4.34
Tributary 9	2.74	0	2.74
Tributary 10	5.79	0	5.79
Tributary 11	2.45	0	2.45

Currently Eligible and Suitable Rivers

Upper Truckee River Recommended Wild & Scenic River

The Upper Truckee River was determined to be eligible in 1999, as a result of the Eight Eastside Rivers Wild and Scenic River Study Report and Final Environmental Impact Statement (USDA Forest Service Tahoe National NF and LTBMU 1999). Forest Supervisor Juan Palma recommended its designation to the Wild and Scenic River System as a Wild River. The Acting Regional Forester concurred and forwarded the recommendation to the Chief of the Forest Service.

The Upper Truckee Recommended Wild River has a special mix of recreation, scenic values, and historic values that are considered Outstandingly Remarkable.

A seven-mile segment of the Upper Truckee River on the LTBMU is eligible for Wild and Scenic River designation (Figure 1). The eligible segment is located in the Meiss/Dardanelles Inventoried Roadless Area, from Carson Pass to south of Upper Truckee Rd. Until designated, the interim corridor includes an approximate ¼-mile buffer on either side.

Formal designation of a Wild and Scenic River requires an act of Congress, similar to wilderness designation. Pending formal designation, the LTBMU must manage the river to protect its free flowing character, specific outstandingly remarkable values, and its Wild classification, in accordance with FSH 1909.12 Chapter 82.5 – Interim Management of Eligible or Suitable Rivers. Formal designation would require the LTBMU to develop a specific management plan for the river and a final boundary for the corridor.

The Upper Truckee River is considered eligible because it has a special mix of recreation, scenic, and historic values that are all considered Outstandingly Remarkable. The largest watershed feeding Lake Tahoe, it has scenic landforms, attractive meadows, and easy access, attracting various backcountry users. In addition, the historic cabin provides a scenic accent to the high-country meadows. The cabin is unique in that it has been maintained over the years so one can see an intact working-ranch cabin instead of the remnants of an old historic cabin. In addition to these values, self-sustaining populations of Lahontan cutthroat trout and highly valued early summer deer fawning habitat provide for special natural values which are also identified as OR values. The combination of these values indicates that this stream can clearly be considered an excellent candidate representing eastside Sierran streams and a worthy addition to the National System of Wild and Scenic Rivers.

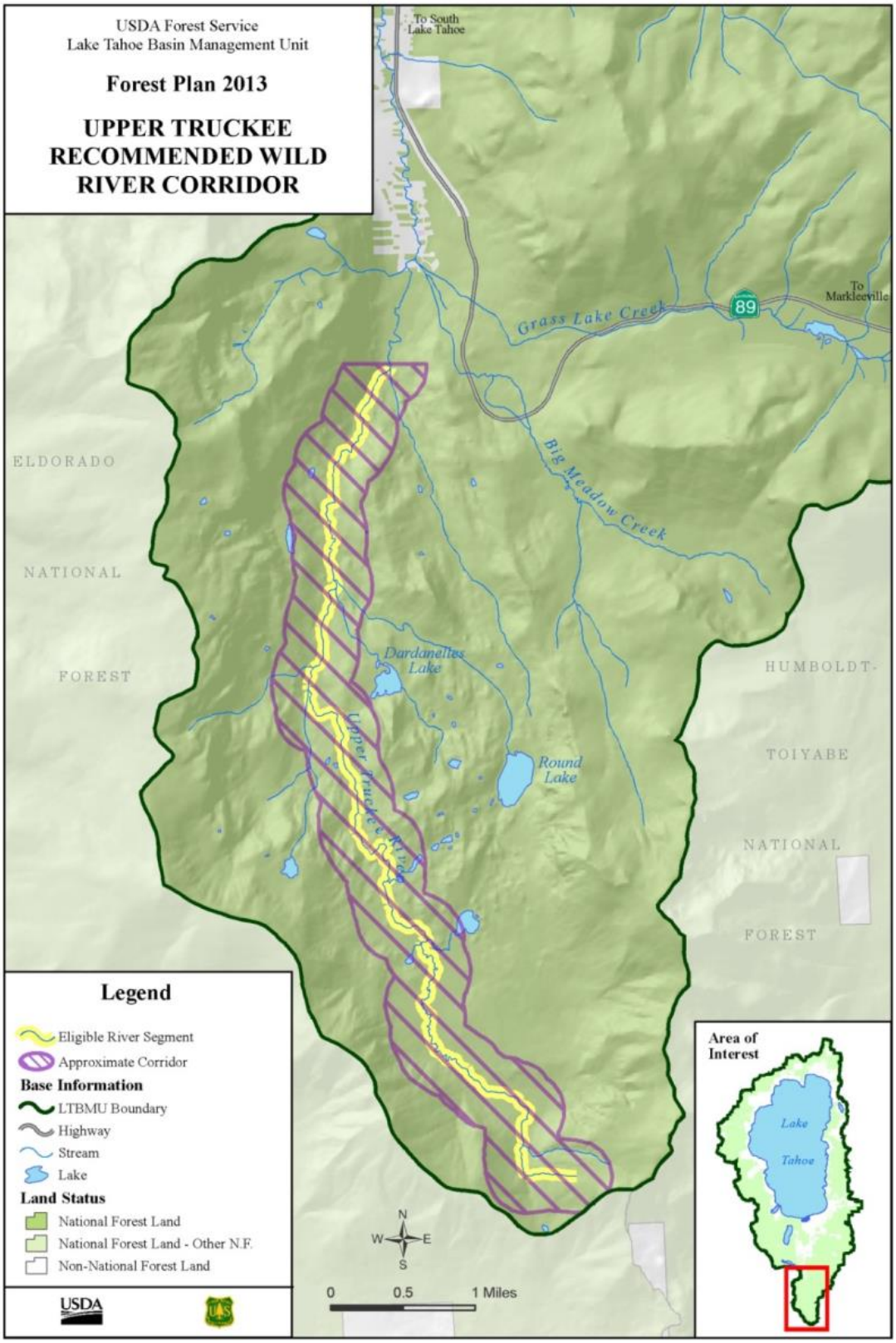


Figure B 1. Upper Truckee River recommended wild river segment

Rivers Determined to be Not Suitable

Truckee River

In the FEIS for the Eight Eastside Rivers Wild and Scenic River Study Report (USDA Forest Service, 1999) the Truckee River is described as being eligible for Recreational classification as a Wild and Scenic River because of the Outstandingly Remarkable recreational and cultural values. However, the Record of Decision for the Eight Eastside Rivers Wild and Scenic River Study Report (USDA Forest Service, 1999) describes the rationale for the determination that the Truckee River is not suitable as:

> *"Truckee River*: The lower, or mainstem, Truckee River has Outstandingly Remarkable recreation and prehistoric values. The recreation values were considered significant due to the high levels of general recreation use, the orientation of most of this use towards the river, and the opportunity for the public to raft without guides in a high-mountain environment. The prehistoric values relate to several recorded village sites of the Native American Washoe who used the Truckee River as a transportation corridor and as a source of fish, a critical food supply for the Washoe.
>
> While recognizing the Outstandingly Remarkable values for the Truckee River, we do not consider the river suitable for the following reasons. The Forest Service's ability to manage the Truckee River is limited. This river is one of the most adjudicated in America over water rights. These cases have been complicated, controversial, and lengthy in resolution. In addition, National Forest System lands along the Truckee River, commonly referred to as "Landfar Lands," have reserved rights retained by Sierra Pacific Power that a1low power development and power lines along the bed and banks for I 00 feet adjoining the river. These rights are claimed beyond 100 feet of the river but have not been contested to date. The Truckee River is also a corridor for powerlines, sewage lines, water lines, and a bicycle trail, as well as paralleling Highway 89. The utility lines have no alternative locations in this area. Designation could create difficult or costly requirements for future infrastructure modifications or improvements. For this strategic corridor we do not believe it would be appropriate to create additional administrative requirements or limitations that would occur with designation.
>
> The 27 percent of the river corridor that is in private ownership is concentrated on the banks of the river in small parcels. These small holdings would require high levels of administrative time if the Truckee River is designated. These private holdings also have 11 private bridges in 13 miles. While these bridges do not eliminate the river from consideration, they suggest additional administrative costs and various obstacles in the river from bridge supports. The Town of Truckee indicated by letter that it did not support designation of the Truckee River because they felt city zoning would be more effective for managing the river than national designation. The Town was also concerned about retaining future options for the utility corridor parallel to Highway 89 and the Truckee River."

The conditions described in the rationale for determining that the Truckee River is not suitable still apply to the river corridor; so therefore, this determination will be carried forward.

Eligibility Evaluation and Classification of Eligible Segments

Each of the remaining rivers was evaluated by the Forest Service Interdisciplinary Team (IDT). First, the evaluation considered whether each river was free-flowing. Then, the IDT considered the inventory of rivers and identified potential outstandingly remarkable values (ORVs) and assigned each value a scale of importance. The scale of importance was considered on three levels, National, Regional and Less Than Regional. National scale was considered as the entire United States, regional scale is discussed below in the region of comparison section of this report and the less than regional scale was considered the LTBMU. The ORVs and scale of importance for each river is compiled in a separate section near the end of this document (ORV Evaluation Tables). There were several creeks that were found to possess ORVs, but at a scale that was less than regional (ORV evaluation spreadsheet, 2015). These additional creeks that possessed less than regional ORVs were not considered further in the evaluation.

The following creeks were identified by the IDT as possessing one or more outstandingly remarkable values (ORVs) at the regional or national scale (Figures 2-5). The remaining creeks or rivers in the inventory were either already recommended, not suitable or did not possess any ORVs at the regional or national scales (ORV evaluation spreadsheet, 2015).

Eagle Creek

River/Segment GIS Number: 29

Location:

- County: El Dorado County, CA
- Beginning point Description: Dicks Lake in Desolation Wilderness.
- End Point Description: Emerald Bay of Lake Tahoe near Vikingsholm.

Mileage:

- Total: 3.06 National Forest/0.34 Non-National Forest = 3.4 miles
- Studied: 3.06
- Eligible: 3.06

Eligibility Findings:

- **Determination of Free Flow:**
  The study reach is found to be free-flowing.

- **Determination of Outstandingly Remarkable Values:**
  Geo/Hydro - Waterfall into Emerald Bay of Lake Tahoe created by geologic faulting and glaciation (Eagle Falls). There is very high visitor use to these features. Lower falls drops into Emerald Bay and is accessible by car. The upper falls is accessed by a relatively short and accessible hiking trail. Because of backdrop of Emerald Bay and Lake Tahoe to the lower falls, this feature has been photographed extensively and likely recognized at the National level.

  Scenic - Waterfall into Emerald Bay of Lake Tahoe created by geologic faulting and glaciation (Eagle Falls). There is very high visitor use to these features. Lower falls drops into Emerald Bay and is accessible by car. The upper falls is accessed by a relatively short and accessible hiking trail, with popular views

from the bridge located along the trail. Because of backdrop of Emerald Bay and Lake Tahoe to the lower falls, this feature has been photographed extensively and likely recognized at the National level.

Recreation - This area is located above Emerald Bay and experiences very high visitor use to these unique geologic features and waterfall.

These values were found to be outstandingly remarkable. Because this river is free-flowing and has at least one ORV it is found to be eligible.

Classification:

i. Water Resources Development:
There has been no water resources development on this creek.

ii. Shoreline Development
Shoreline development includes both the trail to the upper falls and Eagle Lake as well as an overlook of the lower falls.

iii. Accessibility
This creek is very accessible from the Eagle Falls trailhead at Emerald Bay. Parking is available at the trailhead and the trail follows along the creek to Eagle Lake.

iv. Water Quality
The water in Eagle Creek is both fishable and swimmable.

v. Preliminary Classification
The preliminary classification for Eagle Creek is '*Recreational*'.

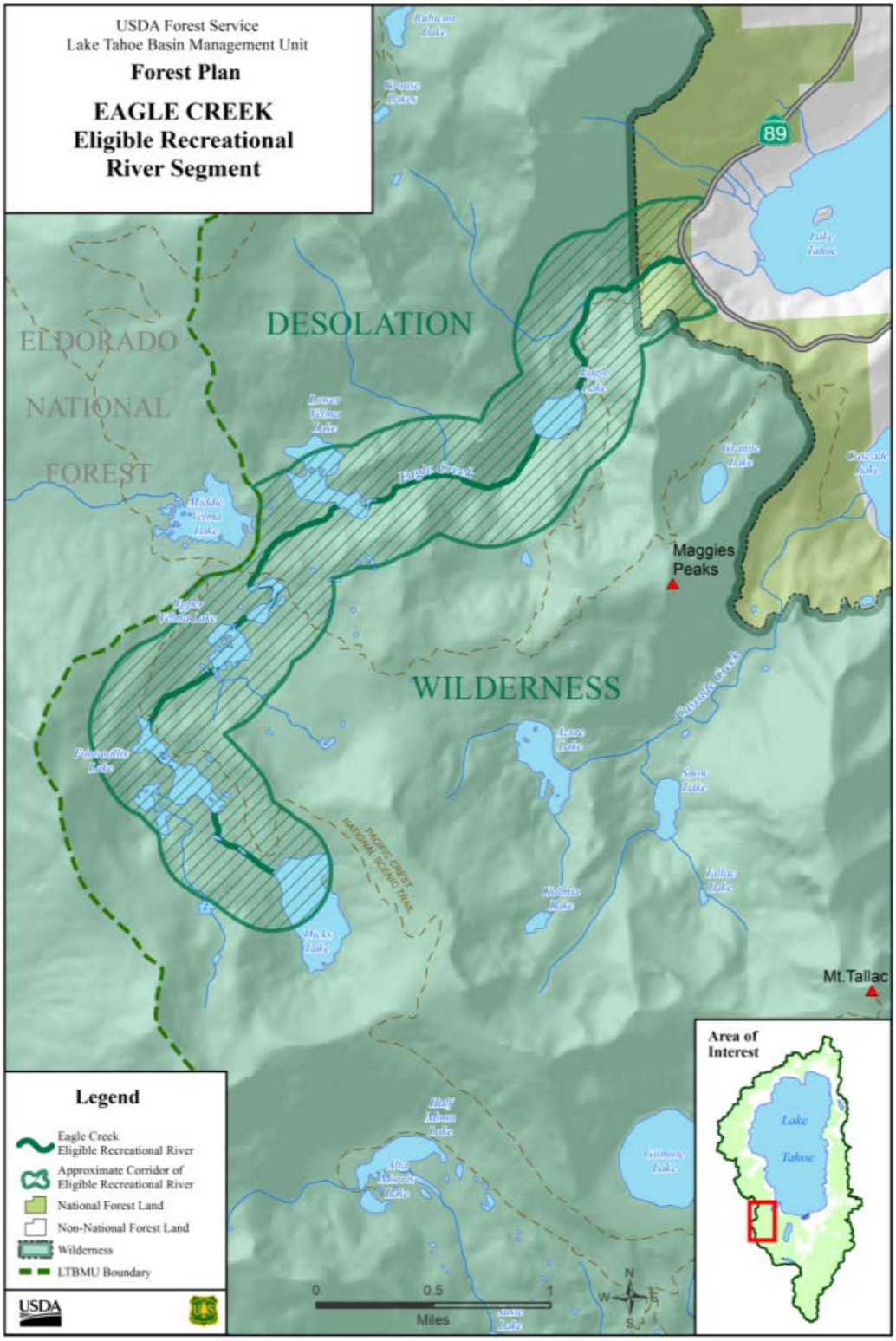


Figure B 2. Eagle Creek eligible river segment

Glen Alpine Creek

River/Segment GIS Number: 30

Location:

- County: El Dorado County, CA
- Beginning point Description: Jabu Lake in the Desolation Wilderness.
- End Point Description: South end of Fallen Leaf Lake.

Mileage:

- Total: 3.0 National Forest/0.49 Non-National Forest = 3.49 miles
- Studied: 3.49
- Eligible: 3.49

Eligibility Findings:

- **Determination of Free Flow:**
  The study reach is found to be free-flowing.

- **Determination of Outstandingly Remarkable Values:**
  Aquatic - Regionally important for federally listed endangered and threatened species occupy and utilize creek for reproduction and other life history requirements. The headwaters of this river provides exceptionally high quality habitat for the federally endangered Sierra Nevada Yellow-legged frog, which is indigenous to the region of comparison. The lower portion provides spawning habitat for Lahontan cutthroat trout, which is indigenous to the region of comparison. These values were found to be outstandingly remarkable because federally listed species use this creek for reproduction.

Classification:

i. Water Resources Development:
   There is water resources development at the Glen Alpine Springs on private property.

ii. Shoreline Development
   There is evidence of development along the shoreline including an access road and trailhead nearby. Glen Alpine Springs is located on private land near the shoreline.

iii. Accessibility
   Glen Alpine Road parallels the creek until the Glen Alpine Springs trailhead. Parking is available at the trailhead. Past the trailhead there is an administrative access road which parallels the creek and provides access to private property.

iv. Water Quality
   The water in Glen Alpine Creek is both fishable and swimmable.

v. Preliminary Classification
   The preliminary classification for Glen Alpine Creek is '*Recreational*'.

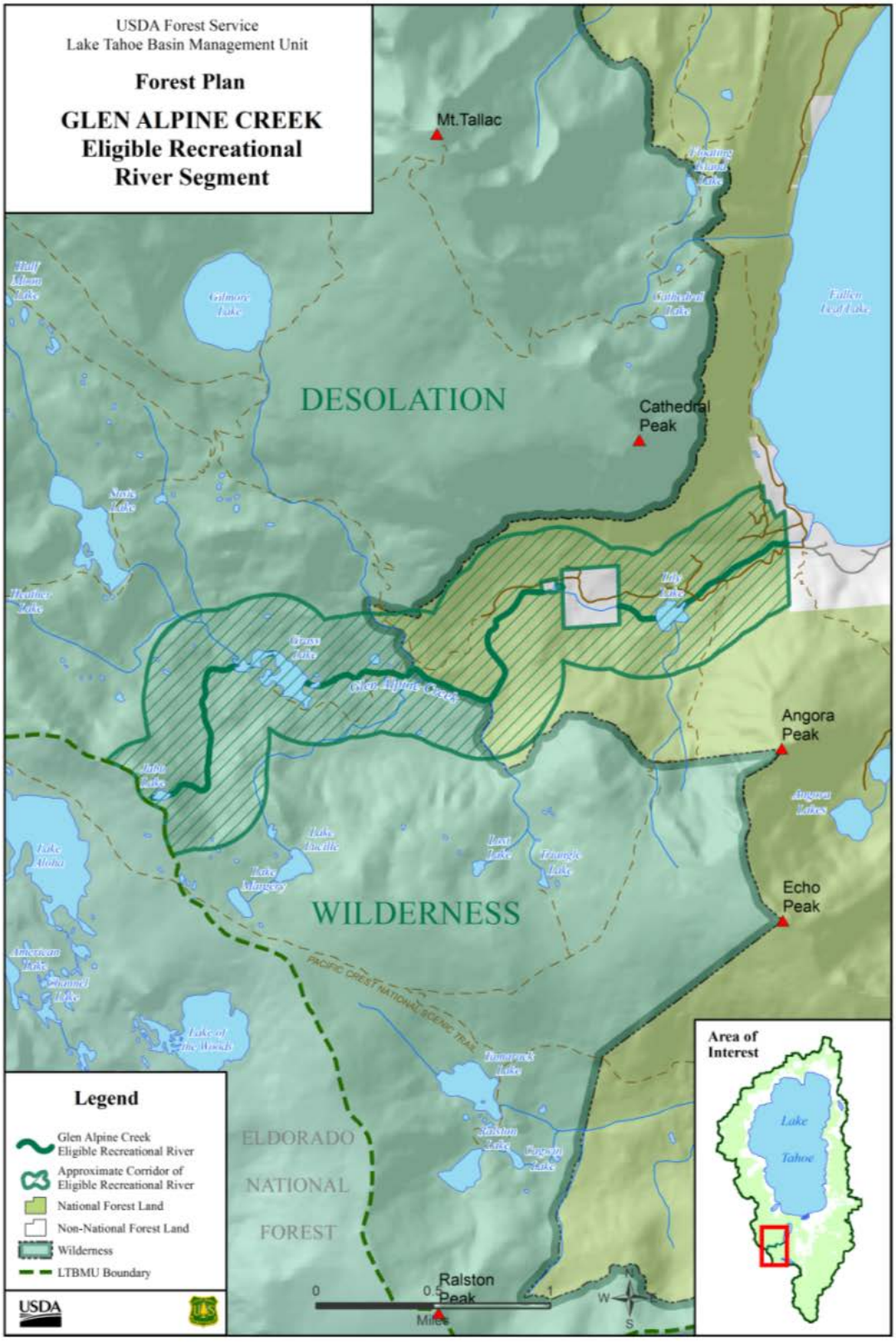


Figure B 3. Glen Alpine Creek eligible river segment

Taylor Creek

River/Segment GIS Number: 5

Location:

- County: El Dorado County, CA
- Beginning point Description: Fallen Leaf Lake.
- End Point Description: Lake Tahoe at Tallac Point.

Mileage:

- Total: 1.9 National Forest/0 Non-National Forest = 1.9 miles
- Studied: 1.90
- Eligible: 1.90

Eligibility Findings:

- **Determination of Free Flow:**
  There is a dam on Fallen Leaf Lake which regulates the flow of Taylor Creek. However, Taylor Creek is considered to be free-flowing beyond the dam.

- **Determination of Outstandingly Remarkable Values:**
  Scenic - Popular views of stream and marsh ecosystem from both land and from Lake Tahoe. Associated with USFS Taylor Creek Visitor Center, trail access is easy. During autumn months, creek is popular destination for viewing kokanee salmon spawning and fall colors of riparian vegetation.

  Heritage - Location of historically significant Washoe summer habitation associated with fisheries resources.

  Wildlife - high wildlife diversity and habitat diversity: bald eagle (FSS) wintering habitat and management zone (known use by bald eagles), waterfowl management zone, bird viewing platform off Rainbow Trail to see birds using Taylor Creek marsh area (including bald eagle), Willow flycatcher (FSS) emphasis habitat and nests along creek corridor, osprey nests, known use by FSS bats, native beaver presence and active dam building, lots of use by bears (and unsafe viewing by humans).

  Recreation - The recreation opportunities surrounding Taylor Creek, including the Taylor Creek Visitor Center, Stream Profile Chamber, Rainbow Trail, etc. have been developed in that location because of the setting provided by the creek. Wildlife viewing (including bears, beavers, songbirds, birds of prey, deer, native Lahontan cutthroat trout and other native fish species, Kokanee Salmon, and other wildlife species) as well as scenic viewing are extremely popular due to the Taylor Creek's unique location and lagoon ecosystem. These recreation opportunities are dependent on the setting of Taylor Creek.

  These values were found to be outstandingly remarkable.

Classification:

i. Water Resources Development:

Taylor creek flows out of a dam at Fallen Leaf Lake. There is no water resources development on Taylor Creek.

ii. Shoreline Development

There is substantial evidence of development along the shoreline including a campground and visitors center with multiple recreational developments (trails and stream profile chamber).

iii. Accessibility

The USFS visitor center provides parking and access to the lower section (north of Highway 89) of Taylor Creek through a trail network and series of interpretive signs.

iv. Water Quality

The water in Taylor Creek is both fishable and swimmable.

v. Preliminary Classification

The preliminary classification for Taylor Creek is '*Recreational*'.

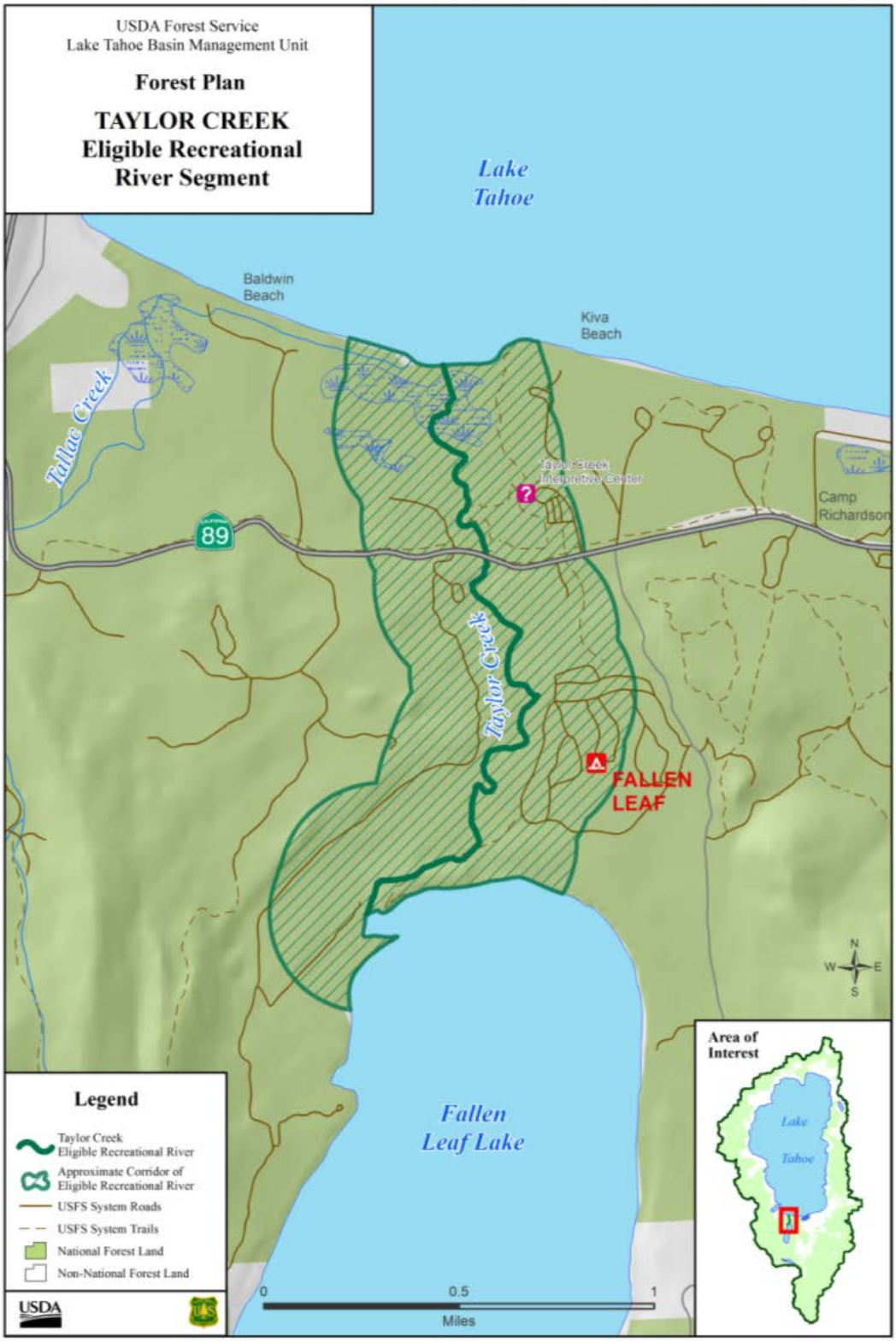


Figure B 4. Taylor Creek eligible river segment

UTR Tributary 5

Location:

- County: El Dorado County, CA
- Beginning point Description: Showers Lake.
- End Point Description: Flows into the Upper Truckee River west of Dardanelles Lake.

Mileage:

- Total: 2.31 National Forest/0 Non-National Forest = 2.31 miles
- Studied: 2.31
- Eligible: 1.39

Eligibility Findings:

- **Determination of Free Flow:**
  The study reach is found to be free-flowing.

- **Determination of Outstandingly Remarkable Values:**
  Aquatic - Lahontan Cutthroat trout habitat and populations are present.

  These values were found to be outstandingly remarkable.

Classification:

i. Water Resources Development:
   This tributary of the Upper Truckee River has no water development. Small, temporary weirs are used for Lahontan Cutthroat Trout restoration.

ii. Shoreline Development
   There is no shoreline development of this tributary.

iii. Accessibility
   There is no trail or road access.

iv. Water Quality
   Meets, or exceeds criteria, or federally approved State standards for aesthetics, for propagation of fish, and wildlife normally adapted to the habitat of the river, and for swimming.

v. Preliminary Classification
   The preliminary classification for UTR Tributary 5 is '*Wild*'.

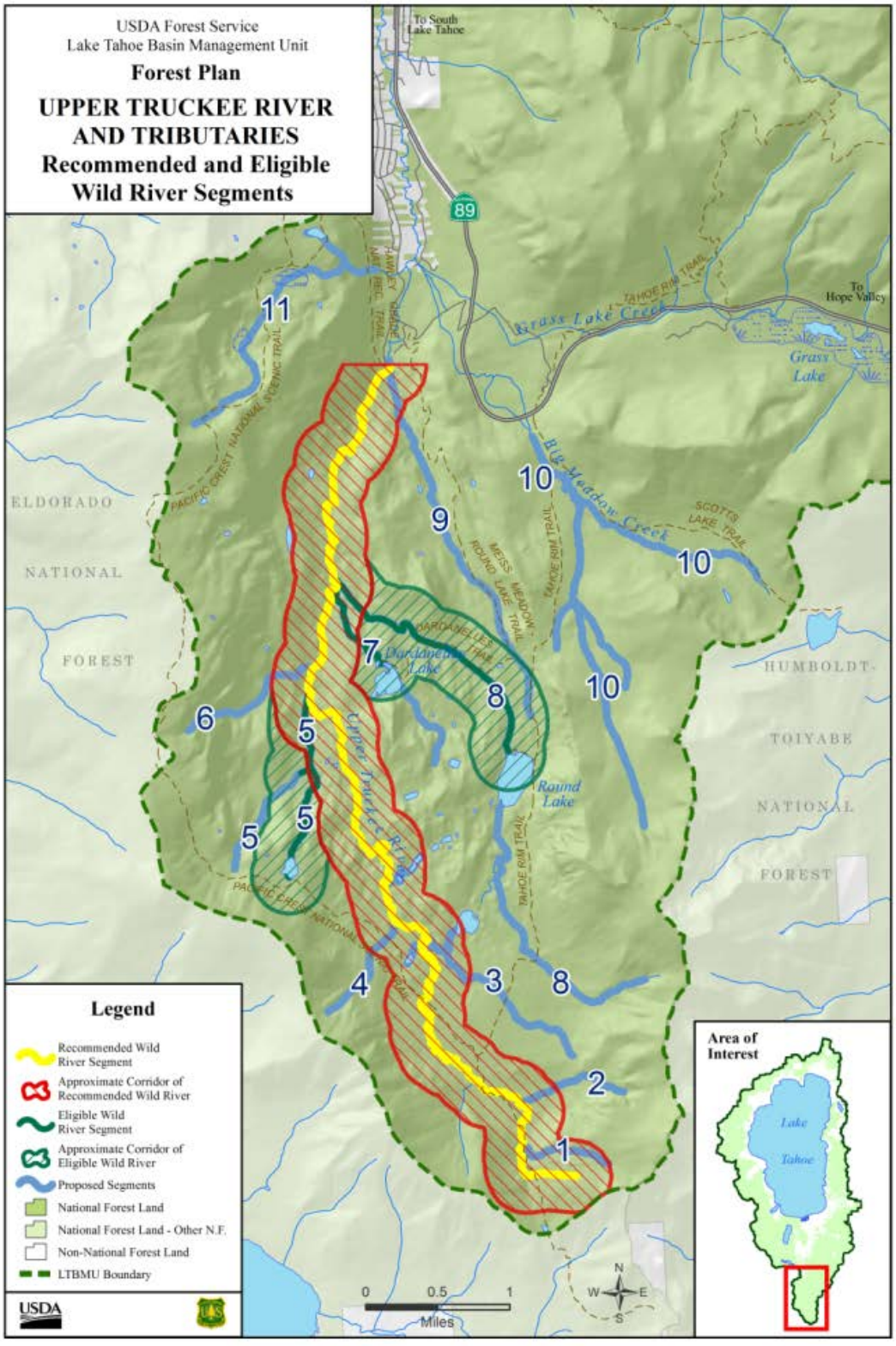


Figure B 5. Upper Truckee River recommended and eligible segments

UTR Tributary 7

Location:

- County: El Dorado County, CA
- Beginning point Description: Northwest of Round Lake.
- End Point Description: Flows through Dardanelles Lake and into the Upper Truckee River.

Mileage:

- Total: 1.51 National Forest/0 Non-National Forest = 1.51 miles
- Studied: 1.51
- Eligible: 0.67

Eligibility Findings:

- **Determination of Free Flow:**
  The study reach is found to be free-flowing.

- **Determination of Outstandingly Remarkable Values:**
  Aquatic - Lahontan Cutthroat trout habitat and populations are present.

  These values were found to be outstandingly remarkable.

Classification:

i. Water Resources Development:
   This tributary of the Upper Truckee River has no water development. Small, temporary weirs are used for Lahontan Cutthroat Trout restoration.

ii. Shoreline Development
   There is no shoreline development of this tributary.

iii. Accessibility
   There is trail access to the section of the tributary near Dardanelles Lake. There is no other trail or road access.

iv. Water Quality
   Meets, or exceeds criteria, or federally approved State standards for aesthetics, for propagation of fish, and wildlife normally adapted to the habitat of the river, and for swimming.

v. Preliminary Classification
   The preliminary classification for UTR Tributary 7 is '*Wild*'.

UTR Tributary 8

Location:

- County: El Dorado County, CA
- Beginning point Description: Southwest of Stevens Peak.

- End Point Description: Flows through Round Lake and into the Upper Truckee River.

Mileage:

- Total: 4.34 National Forest/0 Non-National Forest = 4.34 miles
- Studied: 4.34
- Eligible: 2.01

Eligibility Findings:

- **Determination of Free Flow:**
  The study reach is found to be free-flowing.

- **Determination of Outstandingly Remarkable Values:**
  Aquatic - Lahontan Cutthroat trout habitat and populations are present.

  These values were found to be outstandingly remarkable.

Classification:

i. Water Resources Development:
   This tributary of the Upper Truckee River has no water development. Small, temporary weirs are used for Lahontan Cutthroat Trout restoration.

ii. Shoreline Development
   There is no shoreline development of this tributary.

iii. Accessibility
   There is trail access along about one half mile of this tributary. There is no other trail or road access.

iv. Water Quality
   Meets, or exceeds criteria, or federally approved State standards for aesthetics, for propagation of fish, and wildlife normally adapted to the habitat of the river, and for swimming.

v. Preliminary Classification
   The preliminary classification for UTR Tributary 8 is '*Wild*'.

Region of Comparison

The Region of Comparison (ROC) that was selected for most resources (Hydrological, Geological, Recreation, and Scenery) in this Wild and Scenic River Eligibility study is depicted in Figure 2. This ROC consists of subsections of The Terrestrial Ecologic Unit Inventory (TEUI) which describes ecological types over a wide range of scales in a nested framework. Subsections are the broadest classification units at the Forest level. The Lake Tahoe Basin includes portions of six ecological subsections (Figure 2; Miles and Goudy, 1997 - USDA Forest Service Report No. R5-EM-TP-005).

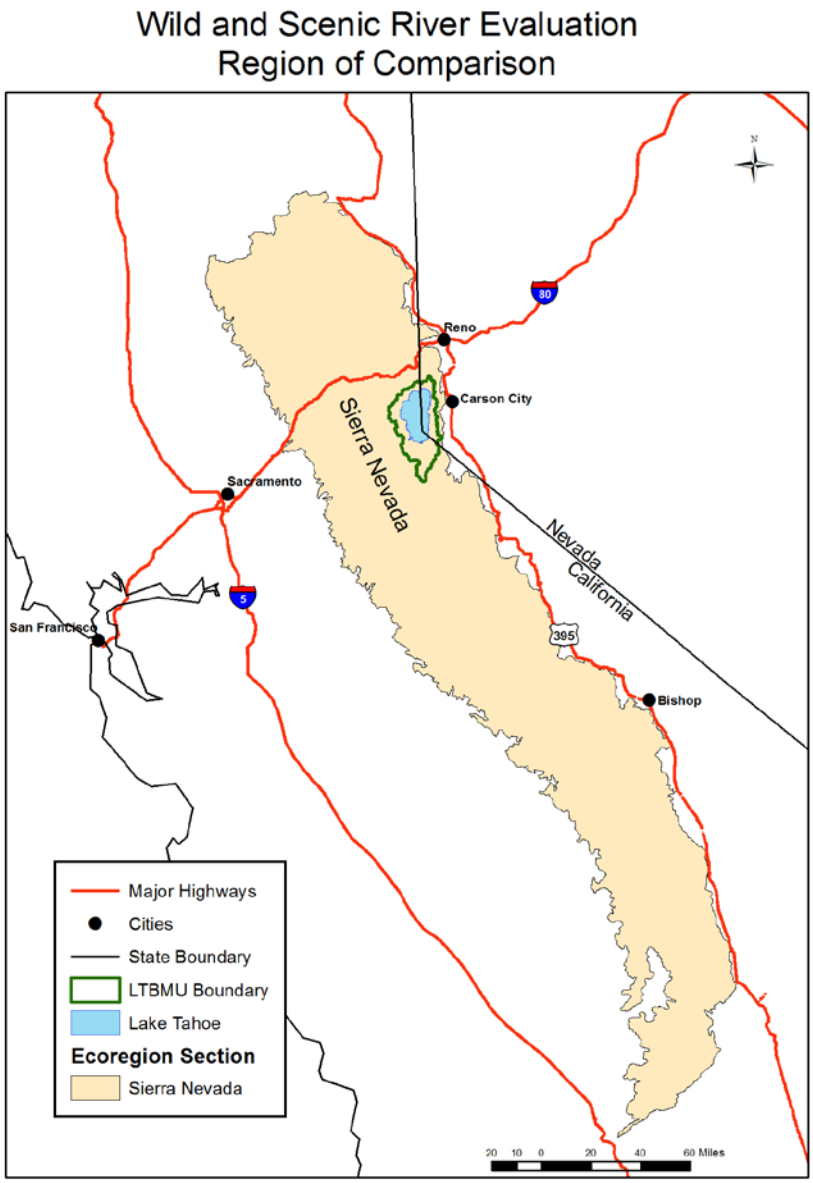


Figure B 6. Ecological subsections of the Lake Tahoe Basin Management Unit (TEUI)

The ROC for wildlife species differed from the general ROC above. The habitat and distribution of threatened, endangered and sensitive species was considered as the ROC. Species considered included Lahontan Cutthroat Trout, Sierra Nevada Yellow Legged Frog, Northern Goshawk, Spotted Owl, Bald Eagle, Willow Flycatcher, Townsend's Big Eared Bat, Pallid Bat, Fringed Myotis (bat) and others. Maps of the habitat considered can be found in the project record.

The ROC for cultural resources also differed from the map shown above. The LTBMU was considered for the Comstock logging and the Washoe Tribal area for tribal related values.

Existing Wild and Scenic Rivers Nearby

Existing Wild and Scenic Rivers within and nearby this ROC include the North Fork of the American River, Middle Fork of the Feather River and the Tuolumne River (http://www.rivers.gov/maps/conus.php, accessed February 4, 2015).

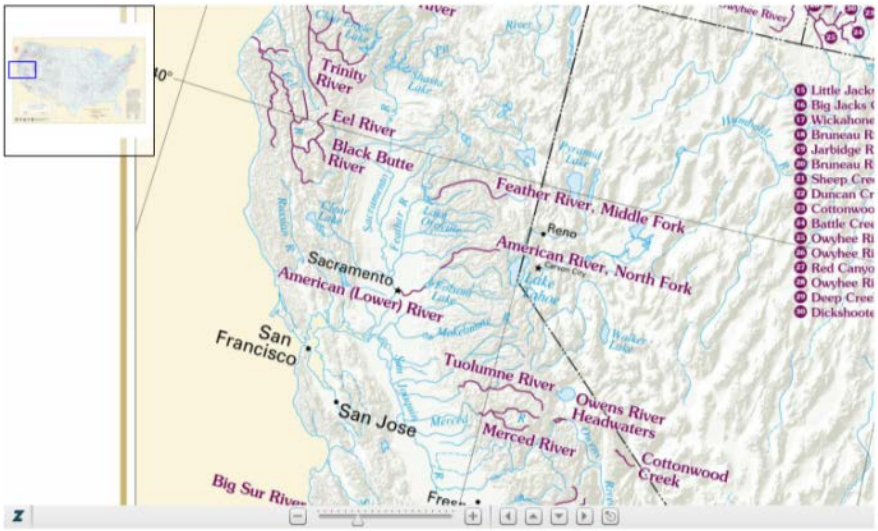


Figure B 7. Existing Wild and Scenic Rivers Nearby

Public Involvement

The Lake Tahoe Basin Management Unit (LTBMU) provided a public comment period for this Wild and Scenic River Eligibility Study. The comment period was held from March 24, 2015 to April 10, 2015. During the comment period the LTBMU held a webinar on Tuesday, March 31, 2015, from 4 p.m. to 5 p.m. to explain the process used in evaluating rivers that may be eligible for inclusion in the National Wild and Scenic River system and to encourage public comment. The webinar included a brief presentation of the overall evaluation process, the procedure used to inventory the rivers in the Lake Tahoe Basin, and the "outstanding remarkable values" that would be used to determine eligibility.

Comments were received from over 200 individuals and groups. Those comments are summarized and addressed below.

Comment: Consider eligibility of Upper Truckee River Tributaries.

Response: Tributaries to the Upper Truckee River were considered as a result of these public comments. Consistent with the regulations (FSH 1909.12, Chapter 80), four tributaries were found to be eligible. These tributaries were found to have existing populations of Lahontan Cutthroat Trout which continued from the main stem of the Upper Truckee River and are actively being managed to restore those populations. This ORV resulted in the determination of their eligibility (USFS, March 2015).

Comment: Complete Suitability Studies.

Response: A Suitability study was not required in the instructions provided by the Objection Deciding Officer (USFS, September 2014). As required in the instructions we will provide for protection of the eligible river corridors in the land management plan until a decision is made on the future use of the river and adjacent lands (FSH 1909.12 (83.1)). A new section has been added to the Forest Plan which lists the eligible rivers and a standard has been added which would provide for protection of the Outstandingly Remarkable Values (ORVs).

Comment: Support for recommending Eagle, Glen Alpine and Taylor Creeks.

Response: Eagle Creek, Glen Alpine Creek and Taylor Creek were all determined to be eligible for inclusion in the Wild and Scenic River (WSR) system and have been potentially classified as "Recreational".

Comment: Designate the Upper Truckee River as a WSR.

Response: The Upper Truckee River has been recommended as a WSR (USFS, February 1999). Only congress can formally designate a river as Wild and Scenic.

Comment: Designate all major tributaries of Lake Tahoe as WSR.

Response: The LTBMU considered all tributaries to Lake Tahoe in the eligibility process. The rationale for determining which creeks possess ORVs and are determined to be eligible is disclosed in the LTBMU Wild and Scenic River Study Report (USFS, 2015).

Comment: Designate Grass Lake Creek as eligible for WSR.

Response: No ORVs were identified either upstream or downstream of Grass Lake by the Interdisciplinary Team during the evaluation. We recognize that Grass Lake itself is the largest example of a Sphagnum bog in the Sierra Nevada and has been established as a Research Natural Area (RNA)(Berg, 1991). Grass Lake was not an identified segment of Grass Lake Creek that was evaluated for ORVs. While the lake depends on the surrounding watershed, the Lake owes its existence to the geology of the area and not necessarily to the presence of the creek. Many factors attributed to the formation of the bog, not just the stream inputs, but soils, geology, plant species, etc. Therefore the ORVs are not considered river-related.

Comment: Re-release the evaluation for public comment before final.

Response: This evaluation is considered final and will not go through further public comment. We have addressed the comments raised during the public comment period.

ORV Evaluation Tables

Table B 3. ORVs and Scale of Importance for LTBMU rivers on National Forest System (NFS) Lands

Watercourse Name	GNIS Number	Hydrographic Category	NFS Miles	Potential Outstandingly Remarkable Values (ORV's)	Scale of Importance	Free Flowing
Angora Creek	26	Perennial	2.38	Recreation - Angora Lakes Resort is located on the shore of one of the Angora Lakes. Angora Creek flows from Angora Lakes. The Resort is dependent on the setting of the lakes but does not depend on the setting of the creek which is downstream.	Less than Regional	Yes
Big Meadow Creek	21	Perennial	4.21	None		Yes
Blackwood Creek	45	Perennial	5.76	Wildlife - habitat and species diversity - spotted owl PAC and HRCA, multiple goshawk PACs and HRCAs, known goshawk nesting, reports of marten use, known FSS bat use, willow flycatcher emphasis habitat and known nests, mule deer habitat, aspen habitat known to be used by a variety of songbirds.	Less than Regional	Yes
Bliss Creek	9	Perennial	1.3	None		Yes
Burke Creek	22	Perennial	2.71	None		Yes
Burton Creek	15	Perennial	1.35	None		Yes
Cascade Creek	20	Perennial	2.58	Geo/Hydro - Large waterfall into lake created by geologic faulting and glaciation (Cascade Falls). Very high visitor use to these features - the falls are a popular destination accessed by relatively short hiking trail. Scenic - Area of falls is highly scenic because of the views of the landscape. Recreation - Waterfalls, unique geology and viewing	Less than Regional Less than Regional Less than Regional	Yes
Cathedral Creek	4	Perennial	0.96	None		Yes
Cold Creek	42	Perennial	5.73	Wildlife - multiple goshawk PACs and nesting, FSS bat use of area, mule deer habitat.	Less than Regional	Yes
Dollar Creek	12	Perennial	0.31	None		Yes

Watercourse Name	GNIS Number	Hydrographic Category	NFS Miles	Potential Outstandingly Remarkable Values (ORV's)	Scale of Importance	Free Flowing
Eagle Creek	29	Perennial	3.06	Geo/Hydro - Waterfall into Emerald Bay of Lake Tahoe created by Geologic faulting and glaciation (Eagle Falls). Very high visitor use to these features. Lower falls drops into Emerald Bay and is accessible by car. Upper falls, accessed by relatively short and accessible hiking trail. Because of backdrop of Emerald Bay and Lake Tahoe to the lower falls, this feature has been photographed extensively and likely recognized at the National level. Scenic - Waterfall into Emerald Bay of Lake Tahoe created by geologic faulting and glaciation (Eagle Falls). Very high visitor use to these features. Lower falls drops into Emerald Bay and is accessible by car. Upper falls, accessed by relatively short and accessible hiking trail, with popular views from trail bridge. Because of backdrop of Emerald Bay and Lake Tahoe to the lower falls, this feature has been photographed extensively and likely recognized at the National level. Area of falls is managed for a "High" minimum scenic integrity objective. Recreation - This area is located above Emerald Bay and experiences very high visitor use to these unique geologic features and waterfall.	Regional Regional Regional	Yes
Edgewood Creek	36	Perennial	1.98	None		Yes
First Creek	9	Perennial	0.77	None		Yes
General Creek	71	Perennial	5.12	None		Yes

Watercourse Name	GNIS Number	Hydrographic Category	NFS Miles	Potential Outstandingly Remarkable Values (ORV's)	Scale of Importance	Free Flowing
Glen Alpine Creek	30	Perennial	3	Scenic - Cascading waterfalls over metamorphic rock is a popular destination for photography. Heritage - Near the stream, just outside of Desolation Wilderness boundary is Glen Alpine Springs Resort, a National Register Eligible, possibly Landmark Status, historic resort associated with nationally recognized architect Bernard Maybeck. The resort is closely tied to the springs in that location but is eligible for the National Register of Historic Places because of the architecture of the buildings and is not dependent on the creek for that eligibility. Aquatic - Regionally important for federally listed endangered and threatened species occupy and utilize creek for reproduction and other life history requirements. The headwaters of this river provides exceptionally high quality habitat for the federally endangered Sierra Nevada Yellow-legged frog, which is indigenous to the region of comparison. The lower portion provides spawning habitat for Lahontan cutthroat trout, which is indigenous to the region of comparison.	Less than Regional Less than Regional Regional	Yes
Glenbrook Creek	25	Intermittent/ Perennial	3	None	-----	Yes
Grass Lake Creek	19	Perennial	4.38	None	-----	Yes
Griff Creek	18	Intermittent/ Perennial	1.54	None	-----	Yes
Heavenly Valley Creek	20	Perennial	3.49	None	-----	Yes
Incline Creek	30	Intermittent/ Perennial	3.4	None	-----	Yes
Lincoln Creek	29	Intermittent/ Perennial	3.83	Heritage - Location of pristine Comstock era Logging Landscape	-----	Yes
Logan House Creek	24	Intermittent/ Perennial	2.78	None	-----	Yes
Madden Creek	16	Perennial	0.79	None	-----	Yes

Watercourse Name	GNIS Number	Hydrographic Category	NFS Miles	Potential Outstandingly Remarkable Values (ORV's)	Scale of Importance	Free Flowing
Marlette Creek	11	Perennial	1.33	None	-----	Flows out of Marlette Lake which is regulated by a dam. Free flowing beyond the dam.
McFaul Creek	43	Perennial/ Intermittent	3.62	None	-----	Yes
McKinney Creek	15	Perennial	3.11	None	-----	Yes
Meeks Creek	45	Perennial	6.44	None	-----	Yes
Middle Fork Blackwood Creek	12	Perennial	1.75	None	-----	Yes
Mill Creek	16	Perennial	0.05	None	-----	There is a dam near the reservoir in the middle of Mill Creek. Free flowing both above and below the dam.
North Canyon Creek	51	Perennial	1.55	None	-----	Yes
North Fork Blackwood Creek	12	Perennial	1.88	None	-----	Yes
North Logan House Creek	19	Intermittent/ Perennial	1.95	Heritage - Location of pristine Comstock era Logging Landscape	-----	Yes
Rubicon Creek	11	Perennial	0.8	None	-----	Yes
Saxon Creek	47	Perennial	6.45	Wildlife - multiple spotted owl PACs and HRCAs, multiple goshawk PACs, known nesting by both species, mule deer habitat	-----	Yes
Second Creek	9	Perennial	1.21	None	-----	Yes
Secret Harbor Creek	14	Perennial	1.9	None	-----	Yes
Tallac Creek	11	Perennial	3.29	None	-----	Yes

Watercourse Name	GNIS Number	Hydrographic Category	NFS Miles	Potential Outstandingly Remarkable Values (ORV's)	Scale of Importance	Free Flowing
Taylor Creek	5	Perennial	1.9	Scenic - Popular views of stream and marsh ecosystem from both land and from Lake Tahoe. Associated with USFS Taylor Creek Visitor Center, trail access is easy. During autumn months, creek is popular destination for viewing kokanee salmon spawning and fall colors of riparian vegetation. Heritage - Location of historically significant Washoe summer habitation associated with fisheries resources. Wildlife - high wildlife diversity and habitat diversity: bald eagle (FSS) wintering habitat and management zone (known use by bald eagles), waterfowl management zone, bird viewing platform off Rainbow Trail to see birds using Taylor Creek marsh area (including bald eagle), Willow flycatcher (FSS) emphasis habitat and nests along creek corridor, osprey nests, known use by FSS bats, native beaver presence and active dam building, lots of use by bears (and unsafe viewing by humans). Recreation - The recreation opportunities surrounding Taylor Creek, including the Taylor Creek Visitor Center, Stream Profile Chamber, Rainbow Trail, etc. have been developed in that location because of the setting provided by the creek. Wildlife viewing (including bears, beavers, songbirds, birds of prey, deer, native Lahontan cutthroat trout and other native fish species, Kokanee Salmon, and other wildlife species) as well as scenic viewing are extremely popular due to the Taylor Creek's unique location and lagoon ecosystem. These recreation opportunities are dependent on the setting of Taylor Creek.	Regional Regional Regional National	Flows out of Fallen Leaf Lake which is regulated by a dam. Free flowing below the dam.
Third Creek	28	Perennial	3.89	None	-----	Yes

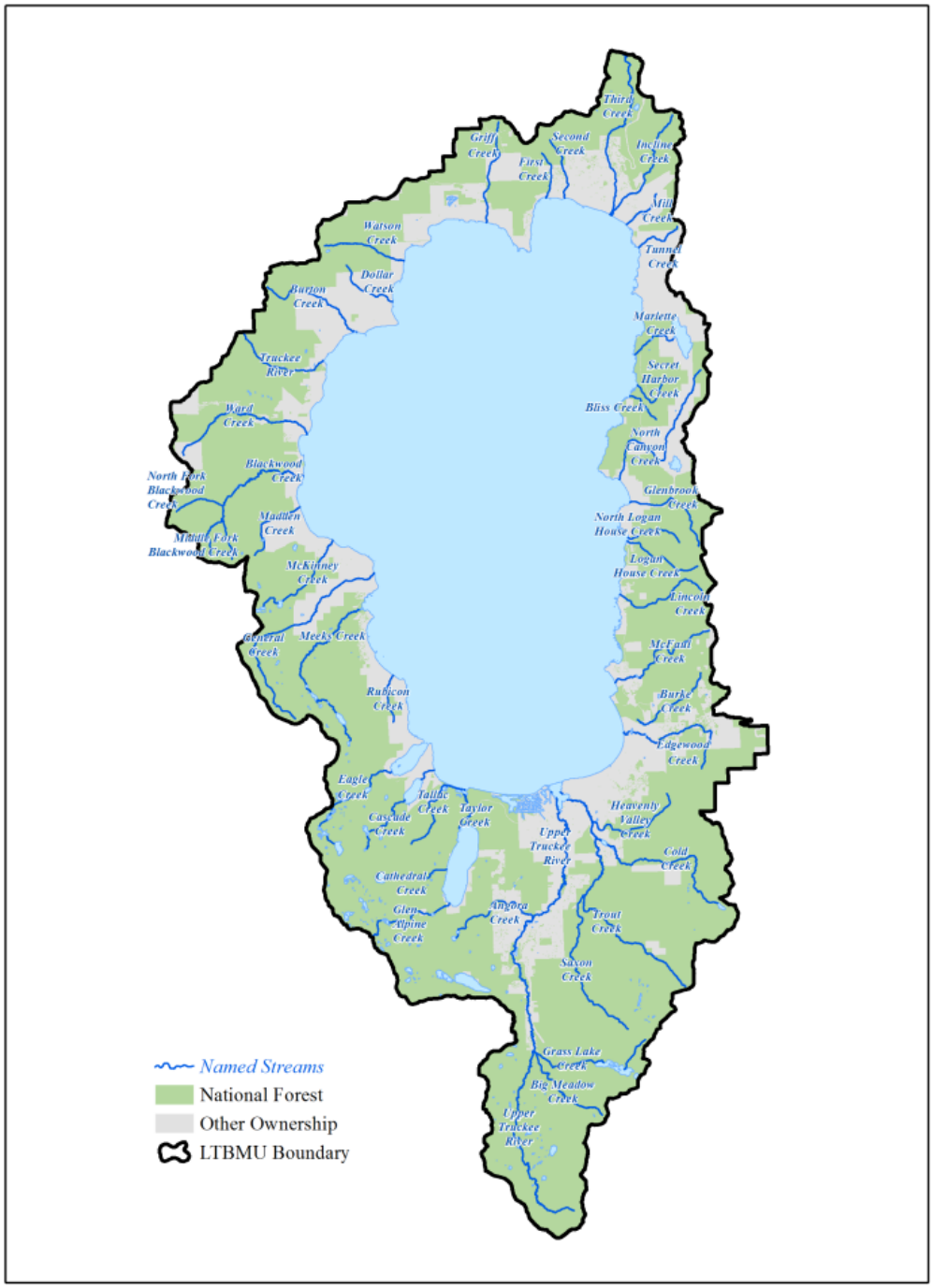
Watercourse Name	GNIS Number	Hydrographic Category	NFS Miles	Potential Outstandingly Remarkable Values (ORV's)	Scale of Importance	Free Flowing
Trout Creek	63	Perennial	8.64	**Wildlife** - diversity of habitat (emphasis habitat [meadow]) for willow flycatcher and more late seral conifer habitat for spotted owl and goshawk). Presence of PACs and HRCAs, known goshawk nests, mule deer habitat. **Aquatic** - A tributary to Trout Creek is Regionally important for the federally listed (endangered) Sierra Nevada Yellow-legged frog. The headwaters tributaries of this river provides exceptionally high quality habitat for reproduction and other life history requirements. The tributaries are a known occupied site. However, for this eligibilty analysis, tributaries are not included.	Less than Regional Regional	Yes
Truckee River	32	Perennial	0.56	Eligible, Not Suitable (Eight Eastside Rivers ROD, 1999)	-----	Yes
Tunnel Creek	14	Perennial	0.18	None	-----	Yes
Upper Truckee River	141	Intermittent/ Perennial	13.22	About 7 miles Recommended 'Wild' River (Eight Eastside Rivers ROD, 1999)	-----	Yes
Ward Creek	28	Perennial	3.94	None	-----	Yes
Watson Creek	10	Perennial	2.64	None	-----	Yes

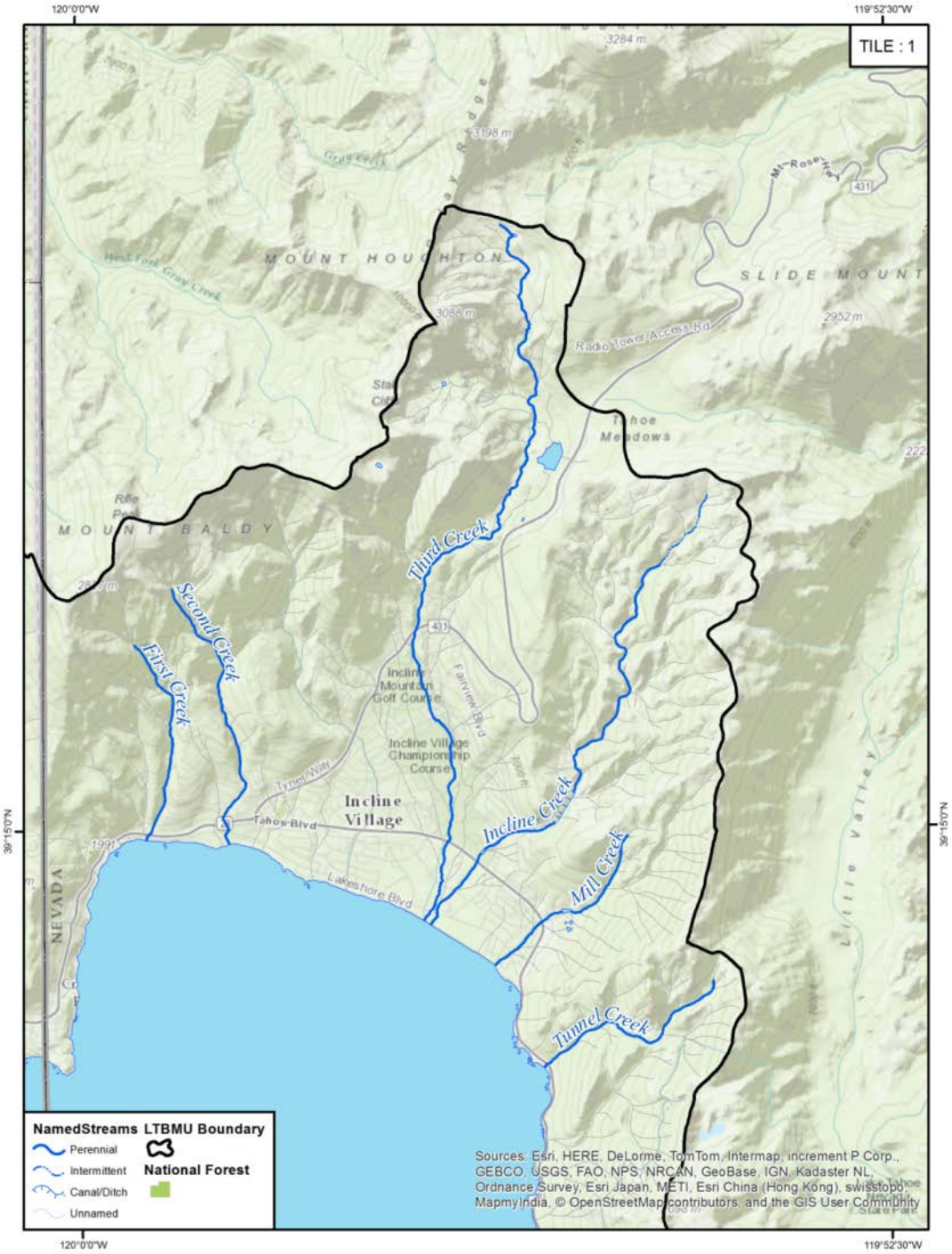
Table B 4. ORVs and Scale of Importance for tributaries of the Upper Truckee River

Watercourse Name	Miles	Potential Outstandingly Remarkable Values (ORV's)	Scale of Importance	Free Flowing
Tributary 1	0.69	None	-----	Yes
Tributary 2	0.82	None	-----	Yes
Tributary 3	1.52	None	-----	Yes
Tributary 4	0.84	None	-----	Yes
Tributary 5	2.31	Aquatic - Lahontan Cutthroat trout habitat and populations are present in portions of this tributary. Scenic - Granitic and volcanic geology and Showers Lake provide a scenic backdrop.	Regional Less than Regional	Yes
Tributary 6	1.09	None	-----	Yes
Tributary 7	1.51	Aquatic - Lahontan Cutthroat trout habitat and populations are present in portions of this tributary. Scenic - Granitic and volcanic geology and Dardanelles Lake provide a scenic backdrop.	Regional Less than Regional	Yes
Tributary 8	4.34	Aquatic - Lahontan Cutthroat trout habitat and populations are present in portions of this tributary. Geo/Hydro - Good example of a Merhten rock formation. Wildlife - Presence of PACs and HRCAs, known goshawk nests, eagle perch sites, and mule deer habitat.	Regional Less than Regional Less than Regional	Yes
Tributary 9	2.74	Wildlife - Presence of PACs and HRCAs, known goshawk nests, eagle perch sites, and mule deer habitat. Recreation - A popular mountain bike and equestrian route is nearby the stream.	Less than Regional Less than Regional	Yes
Tributary 10	5.79	Wildlife - Presence of PACs and HRCAs, known goshawk nests, and mule deer habitat. Scenic - Meadows and aspen stands provide a scenic backdrop.	Less than Regional Less than Regional	Yes
Tributary 11	2.45	Wildlife - Presence of PACs and HRCAs, known goshawk nests, and mule deer habitat. Recreation - The Hawley Grade National Scenic Trail/Pony Express Trail is nearby, but those values are not dependent on the river.	Less than Regional Less than Regional	Yes

Maps

Included in this section are overview maps showing all the rivers that were evaluated and a set of 12 smaller scale, more detailed maps. The detailed maps (Tiles 1-12) begin at the northeast corner of the Lake Tahoe Basin, and proceed clockwise.




120°0'0"W
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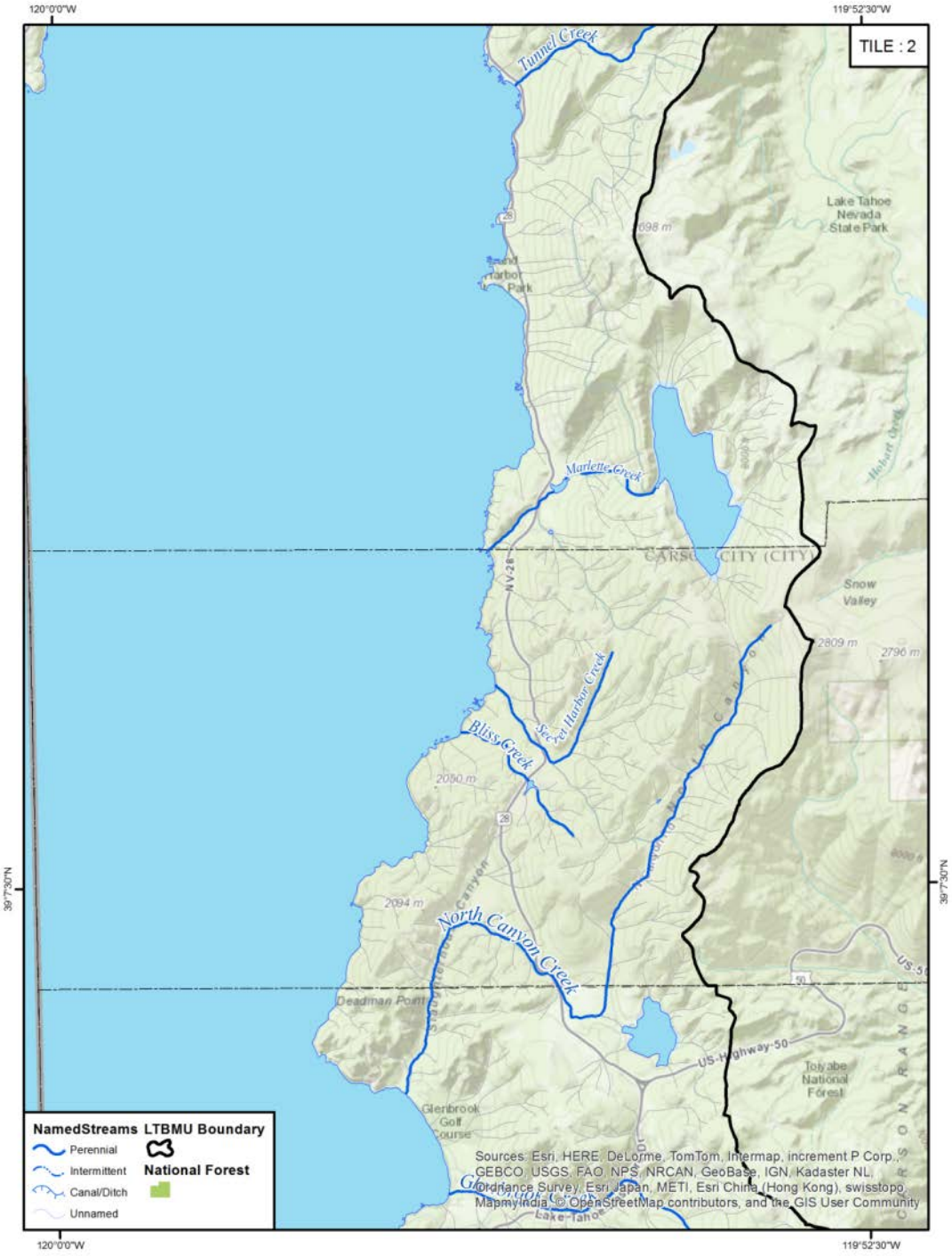
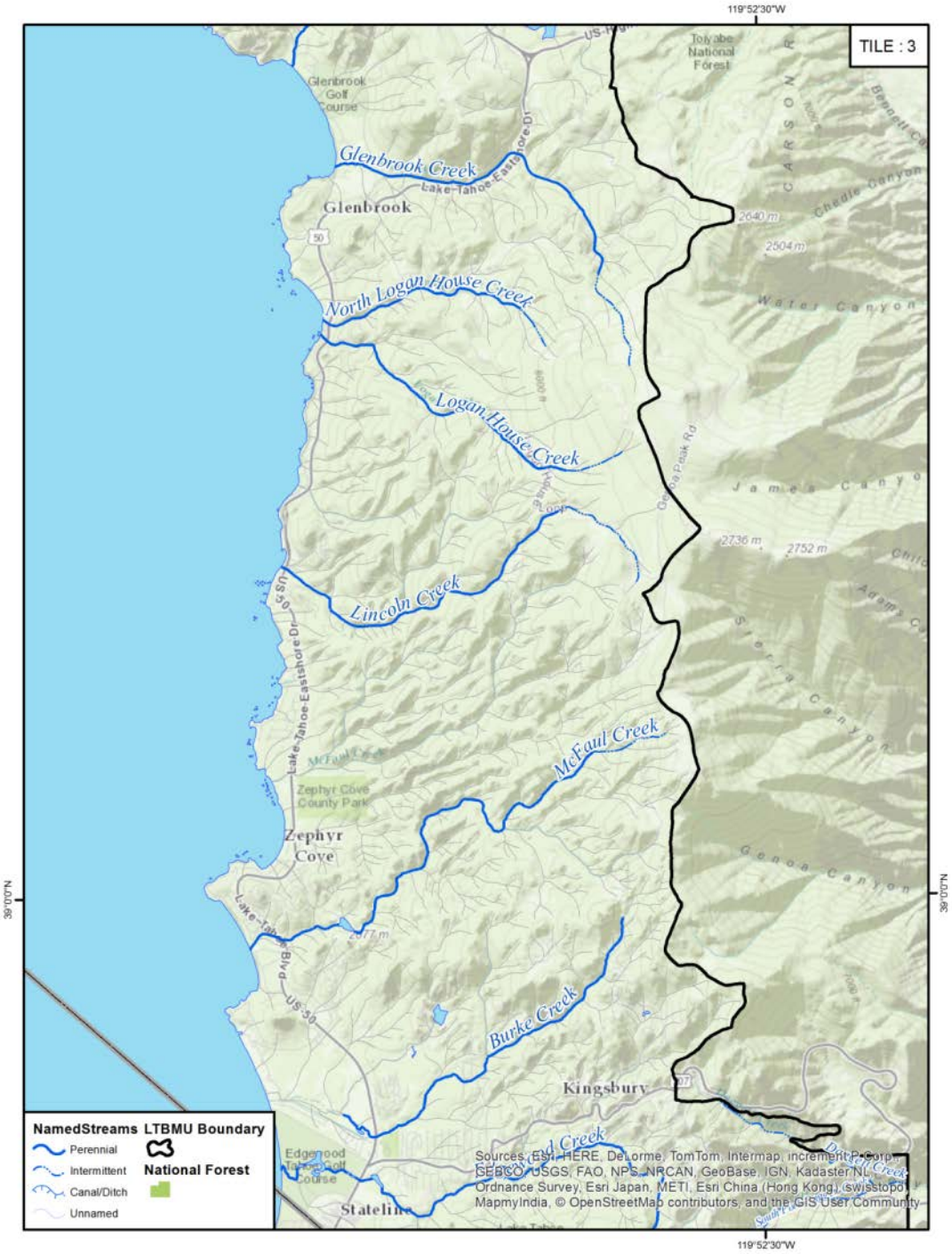
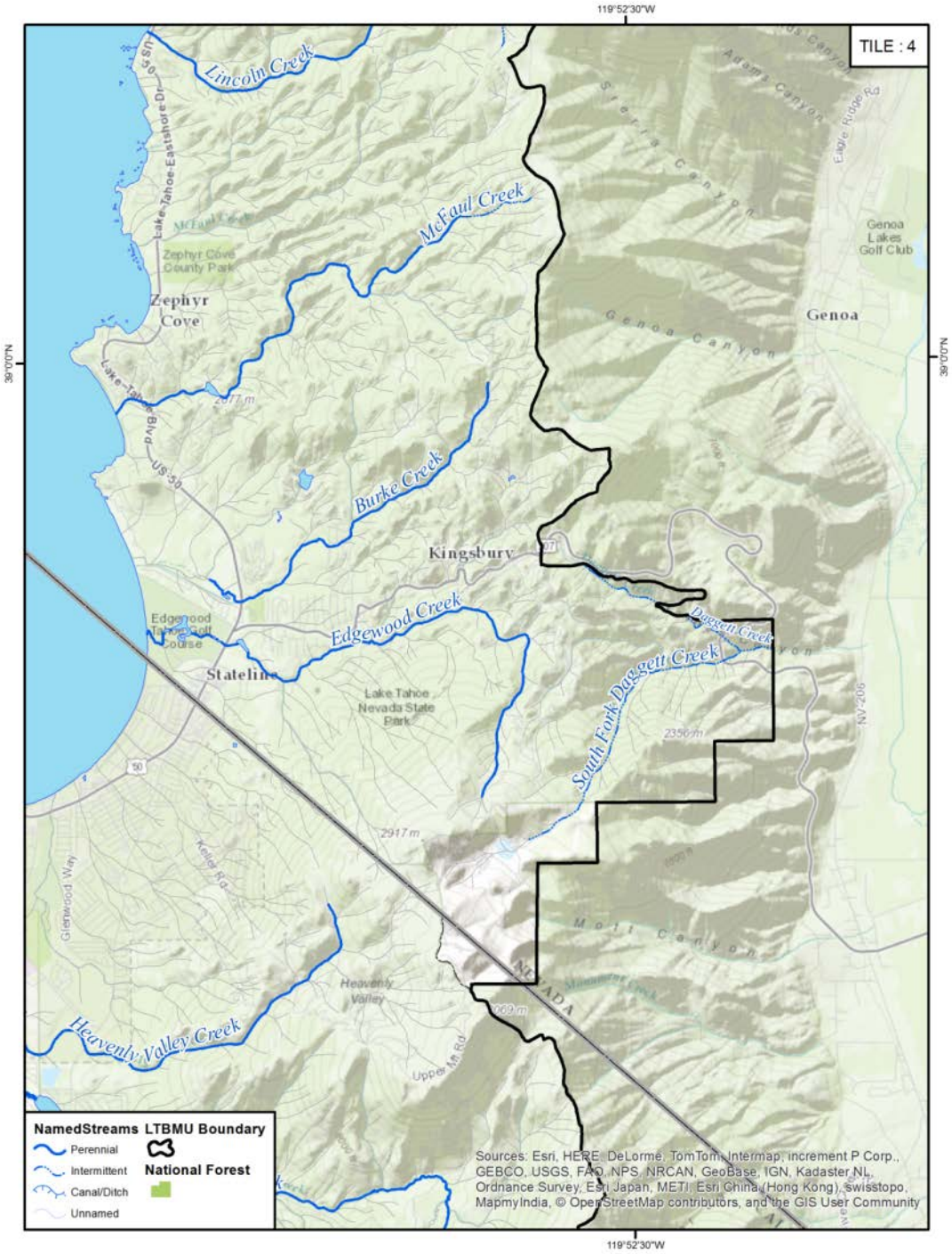
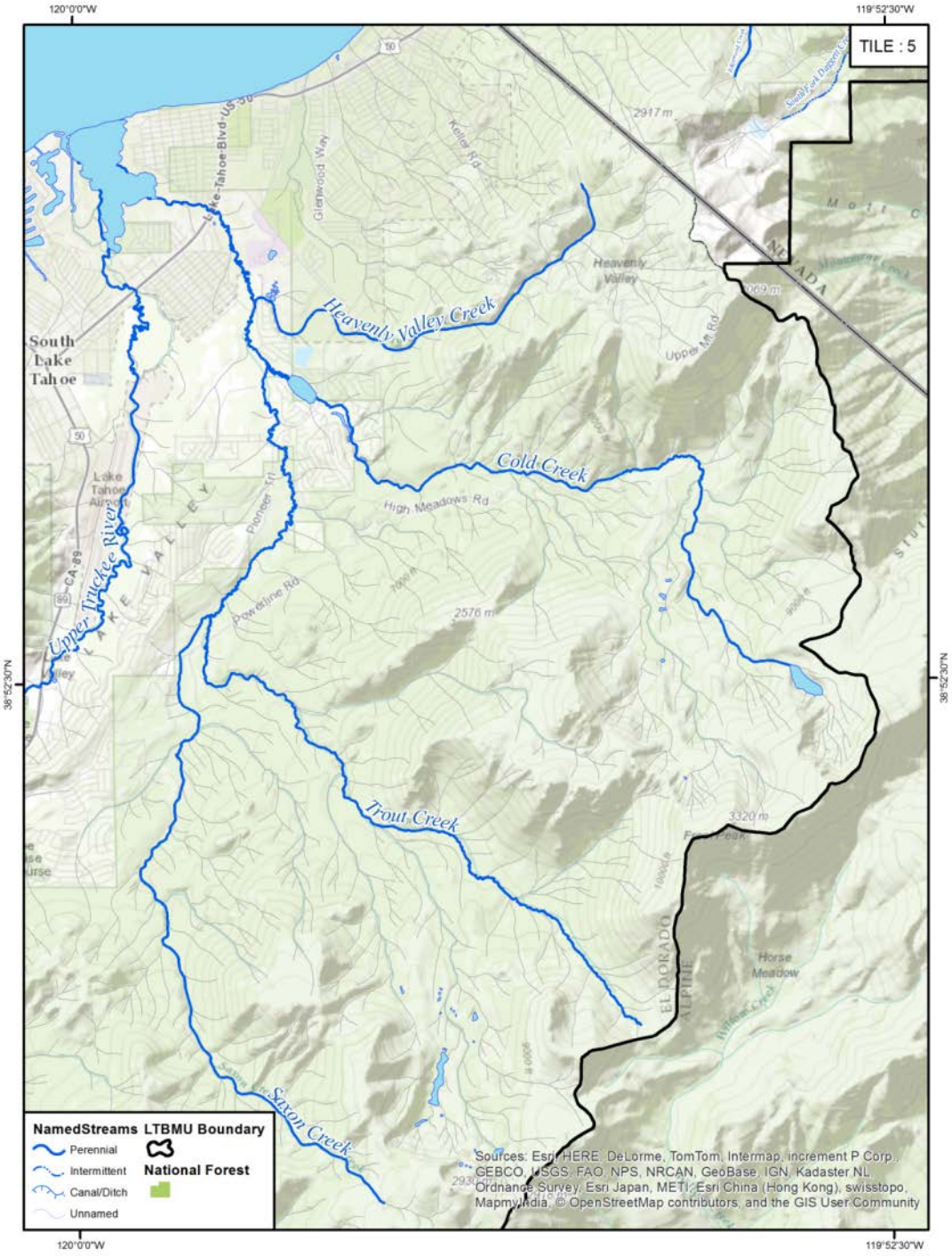
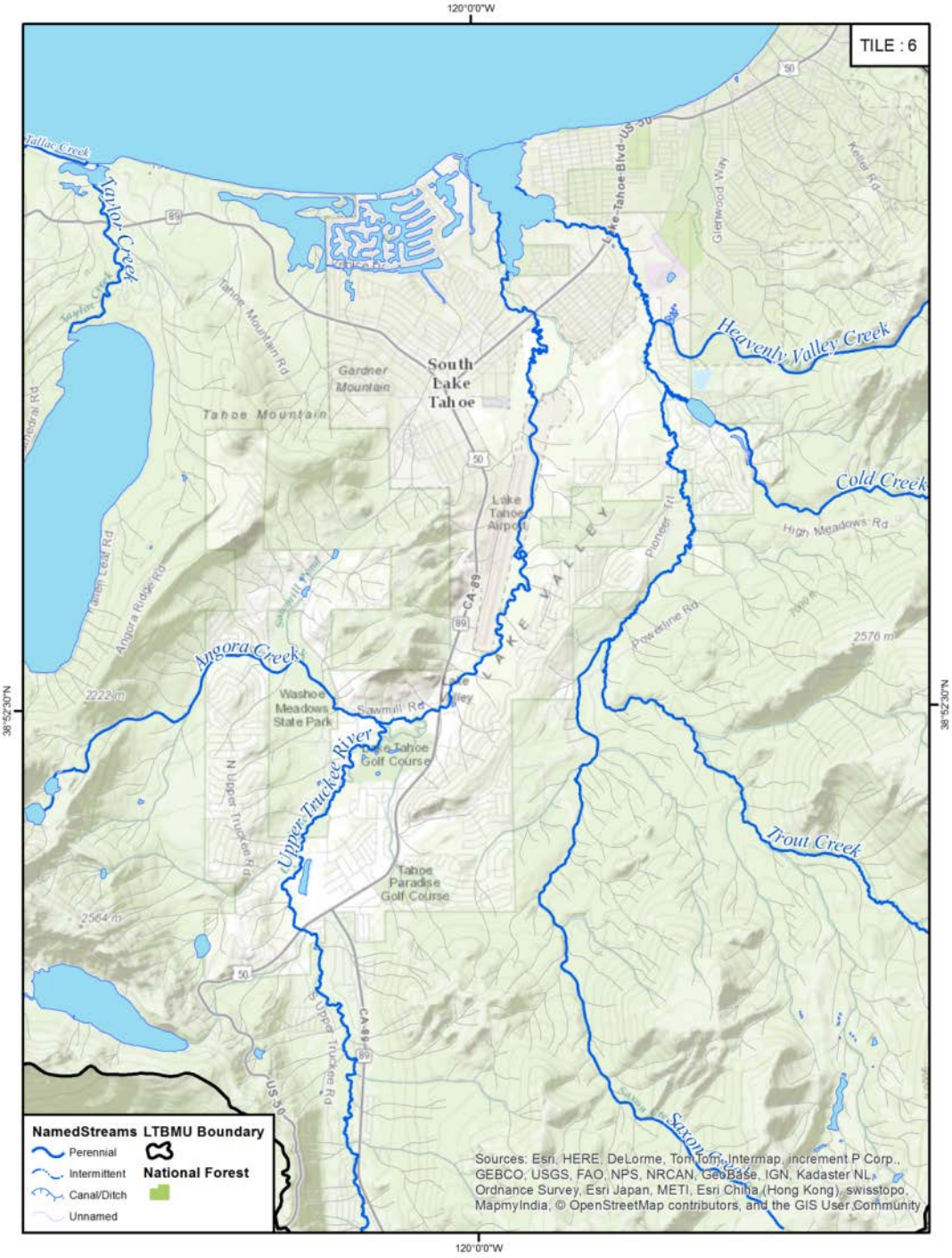
39°15'0"N
39°15'7"N
TILE : 1
MOUNT HOUGHTON
SLIDE MOUNT
MOUNT BALDY
Rifle Peak
Third Creek
Second Creek
First Creek
Incline Village
Incline Creek
Mill Creek
Tunnel Creek
Tahoe Blvd
Lakeshore Blvd
Tyner Way
Fairview Blvd
Incline Mountain Golf Course
Incline Village Championship Course
Radio Tower Access Rd
Tahoe Meadows
Mt Rose Hwy
Little Valley
NEVADA
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

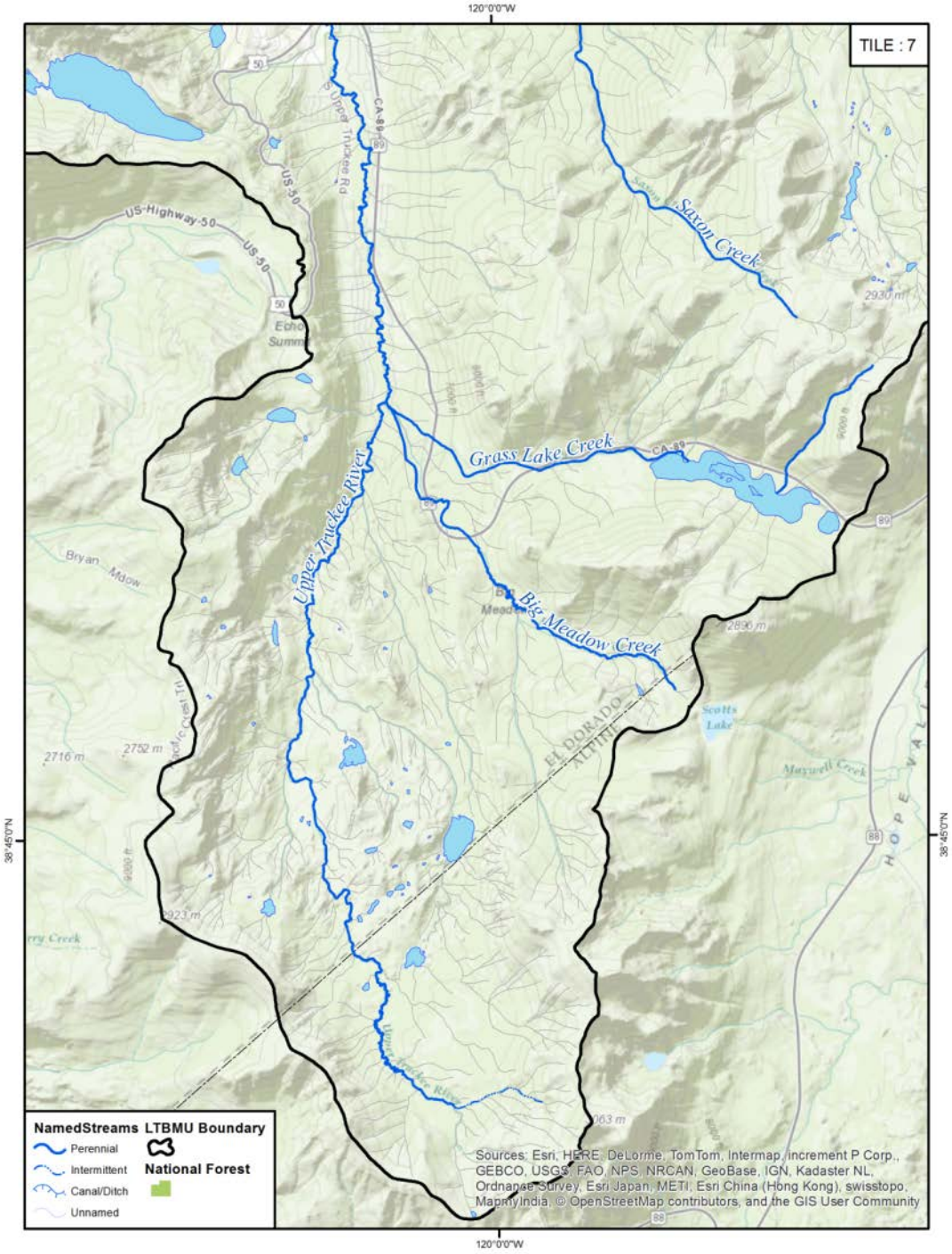

120°0'0"W
119°52'30"W
39°7'30"N
TILE : 2
Tunnel Creek
Lake Tahoe Nevada State Park
Marlette Creek
Hobart Creek
CARSON CITY (CITY)
Snow Valley
2809 m
2796 m
NV-28
Secret Harbor Creek
Bliss Creek
2090 m
2094 m
North Canyon Creek
Deadman Point
US-Highway-50
Tahoe National Forest
Glenbrook Golf Course
Lake Tahoe
CARSON RANGE
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

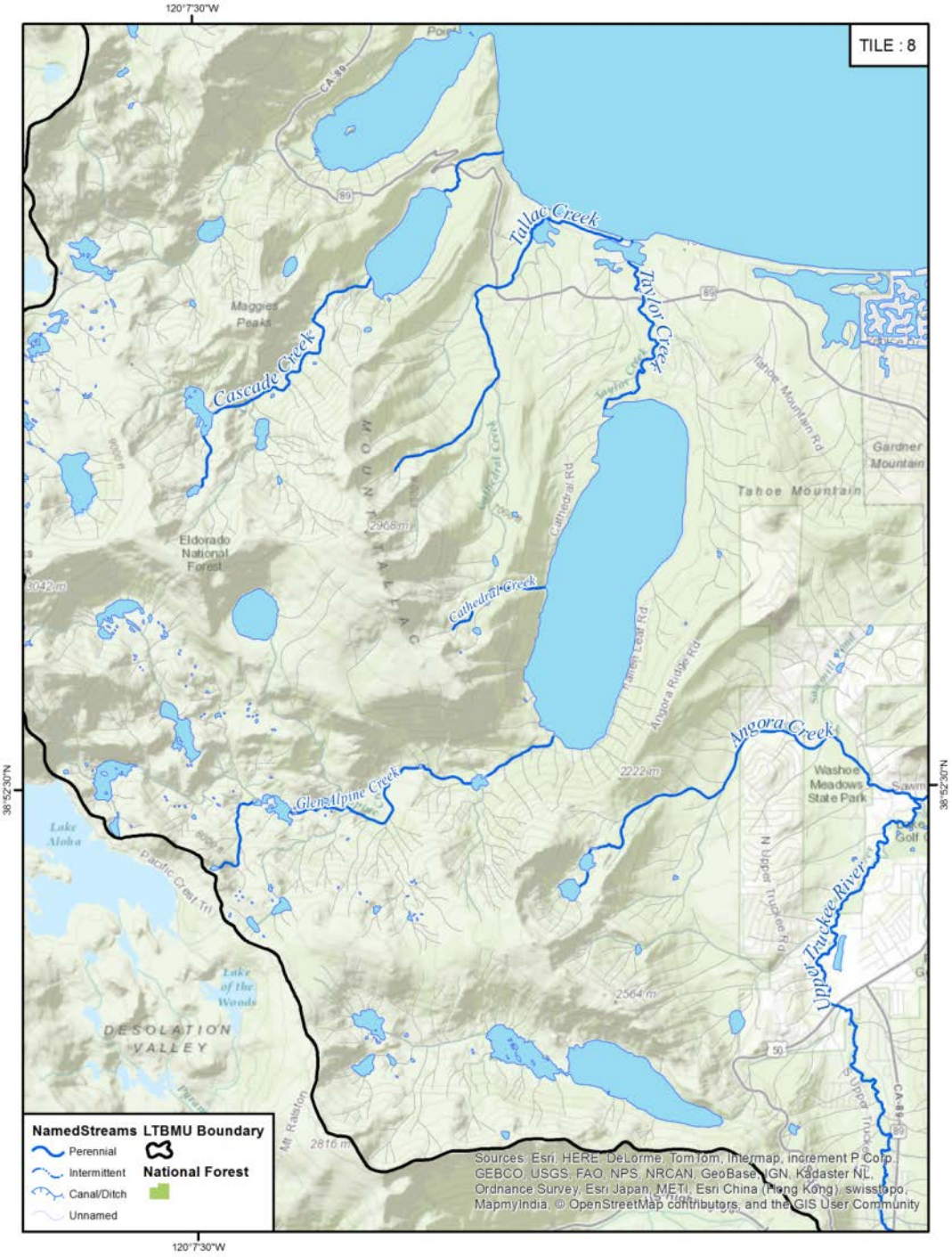

TILE : 3
119°52'30"W
39°0'0"N
Glenbrook Creek
Glenbrook
North Logan House Creek
Logan House Creek
Lincoln Creek
McFaul Creek
Burke Creek
Kingsbury
Zephyr Cove
Stateline
Lake Tahoe-Eastshore Dr
US-50
Tahoe National Forest
Glenbrook Golf Course
Zephyr Cove County Park
Edgewood Tahoe Golf Course
2640 m
2504 m
2736 m
2752 m
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

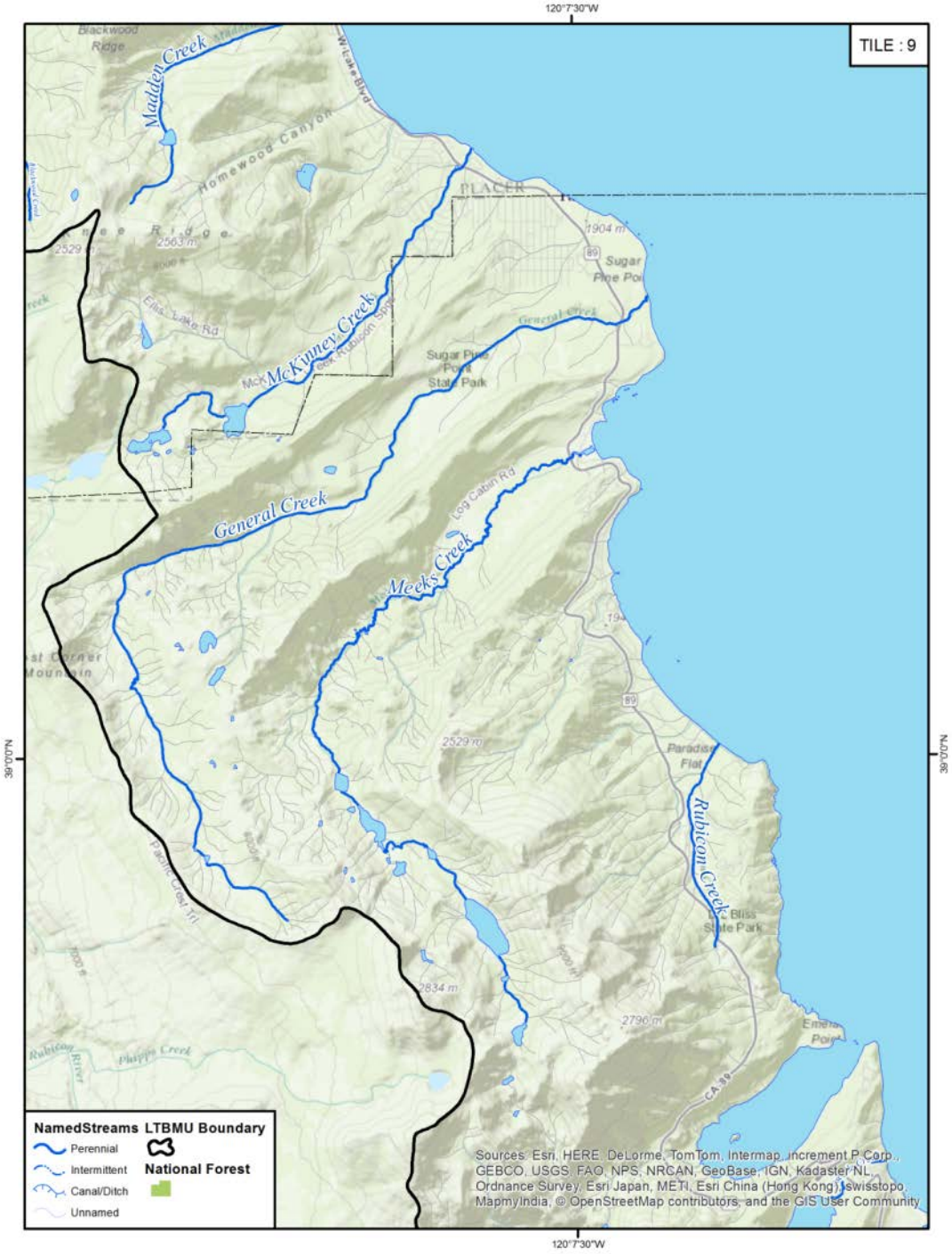

TILE : 4
119°52'30"W
39°0'0"N
Lincoln Creek
McFaul Creek
Burke Creek
Edgewood Creek
Daggett Creek
South Fork Daggett Creek
Heavenly Valley Creek
Zephyr Cove
Zephyr Cove County Park
Genoa
Genoa Lakes Golf Club
Kingsbury
Stateline
Edgewood Tahoe Golf Course
Lake Tahoe Nevada State Park
Heavenly Valley
Lake Tahoe Blvd
US 50
NV-206
NEVADA
Sierra Canyon
Genoa Canyon
Adams Canyon
Eagle Ridge Rd
Glenwood Way
Kelley Rd
Upper Mr Rd
2356 m
2917 m
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

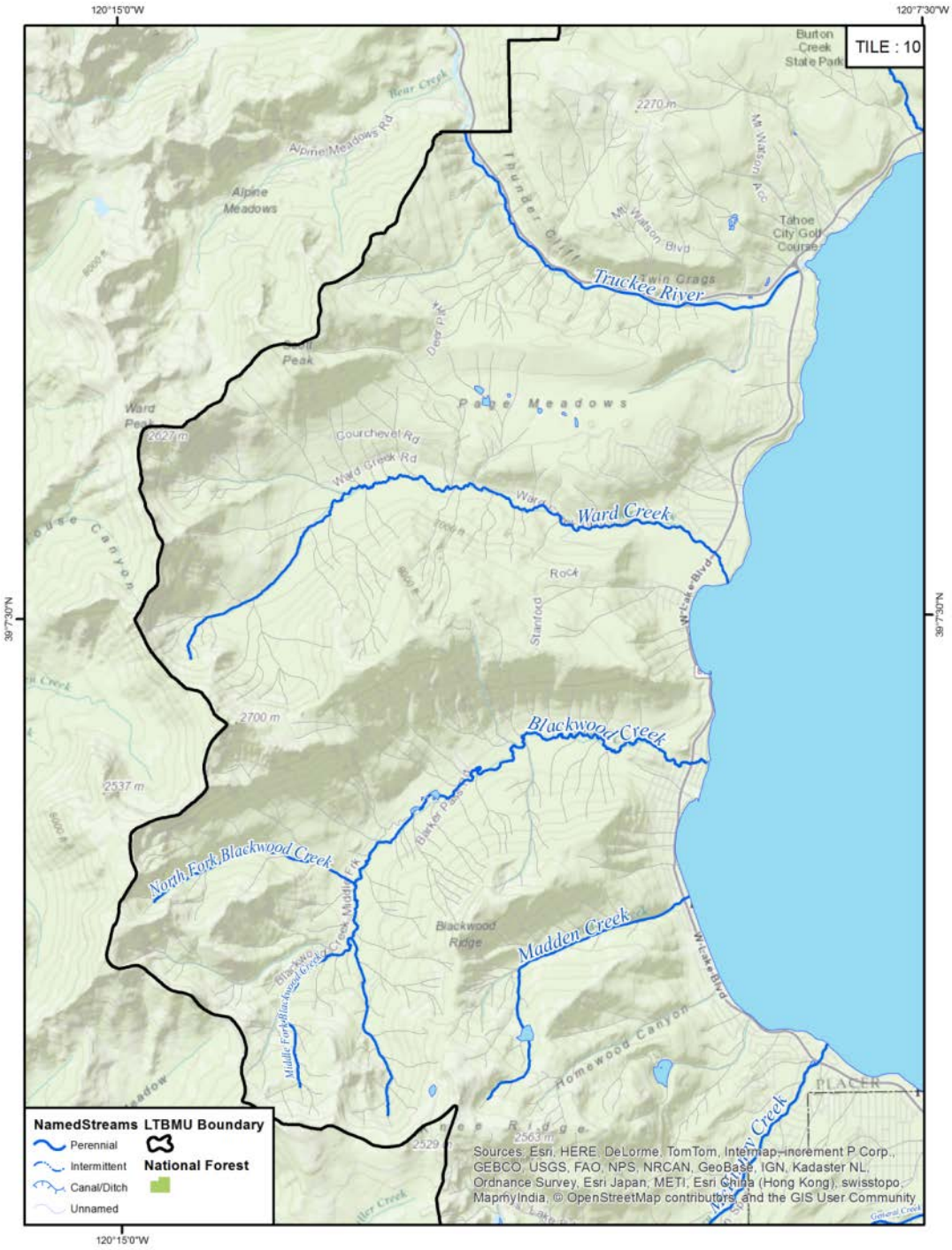

TILE : 5
120°0'0"W
119°52'30"W
38°52'30"N
Heavenly Valley Creek
Cold Creek
Trout Creek
Saxon Creek
Upper Truckee River
South Lake Tahoe
Lake Tahoe Blvd - US 50
Glenwood Way
Keller Rd
Heavenly Valley
Upper Main Rd
High Meadows Rd
Pioneer Trl
Powderline Rd
Lake Tahoe Airport
CA 89
LAKE VALLEY
NEVADA
EL DORADO
Horse Meadow
2917 m
2576 m
3320 m
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

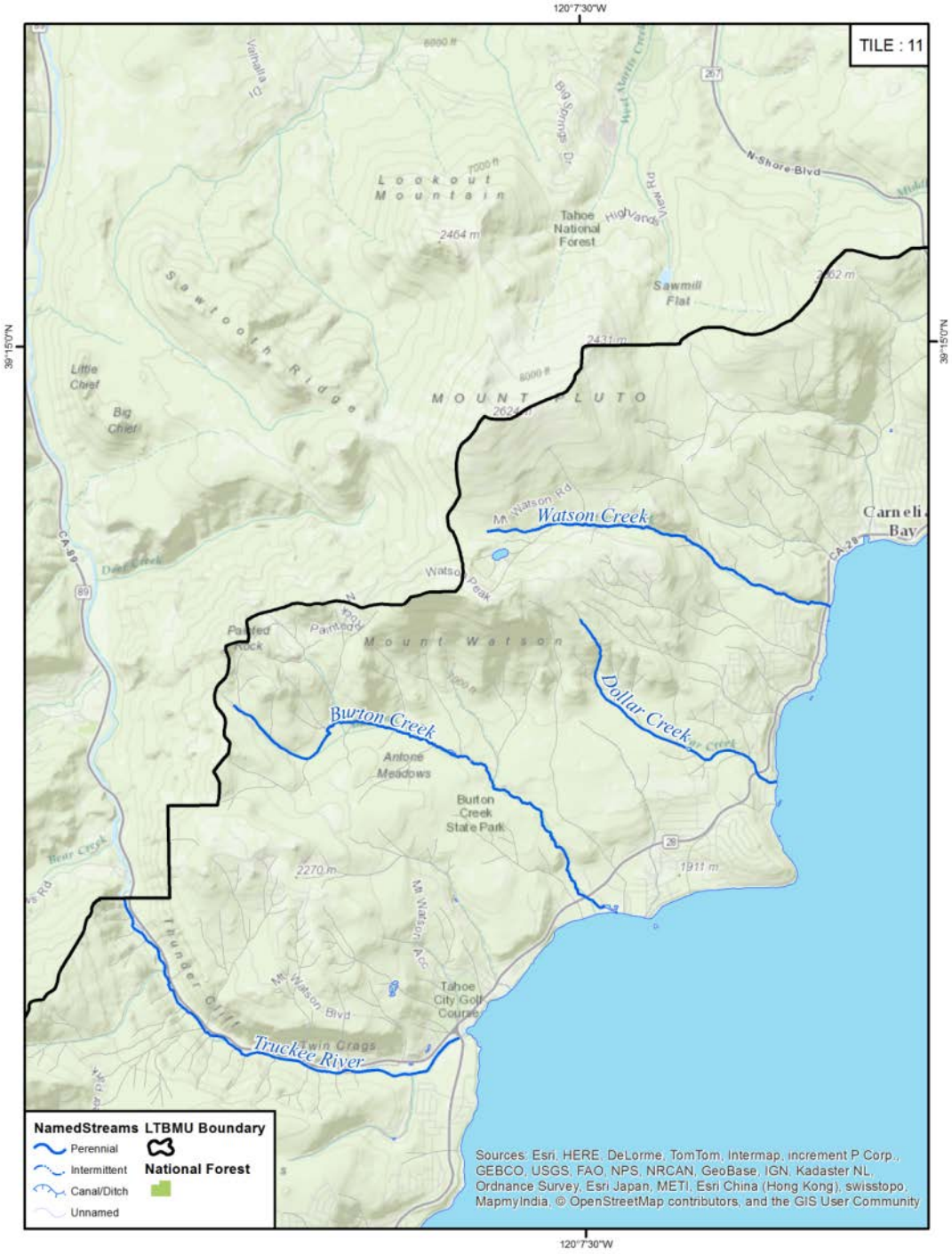

120°0'0"W
TILE : 6
38°52'30"N
Taylor Creek
Tallac Creek
Tahoe Mountain Rd
Gardner Mountain
Tahoe Mountain
South Lake Tahoe
Lake Tahoe Airport
LAKE VALLEY
CA-89
Angora Ridge Rd
Angora Creek
2222 m
Washoe Meadows State Park
Sawmill Rd
Lake Tahoe Golf Course
Upper Truckee River
N Upper Truckee Rd
Tahoe Paradise Golf Course
2564 m
US-50
S Upper Truckee Rd
Lake Tahoe Blvd-US-50
Glenwood Way
Keller Rd
Heavenly Valley Creek
Cold Creek
High Meadows Rd
Pioneer Trl
Powerline Rd
2576 m
Trout Creek
Saxon Creek
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

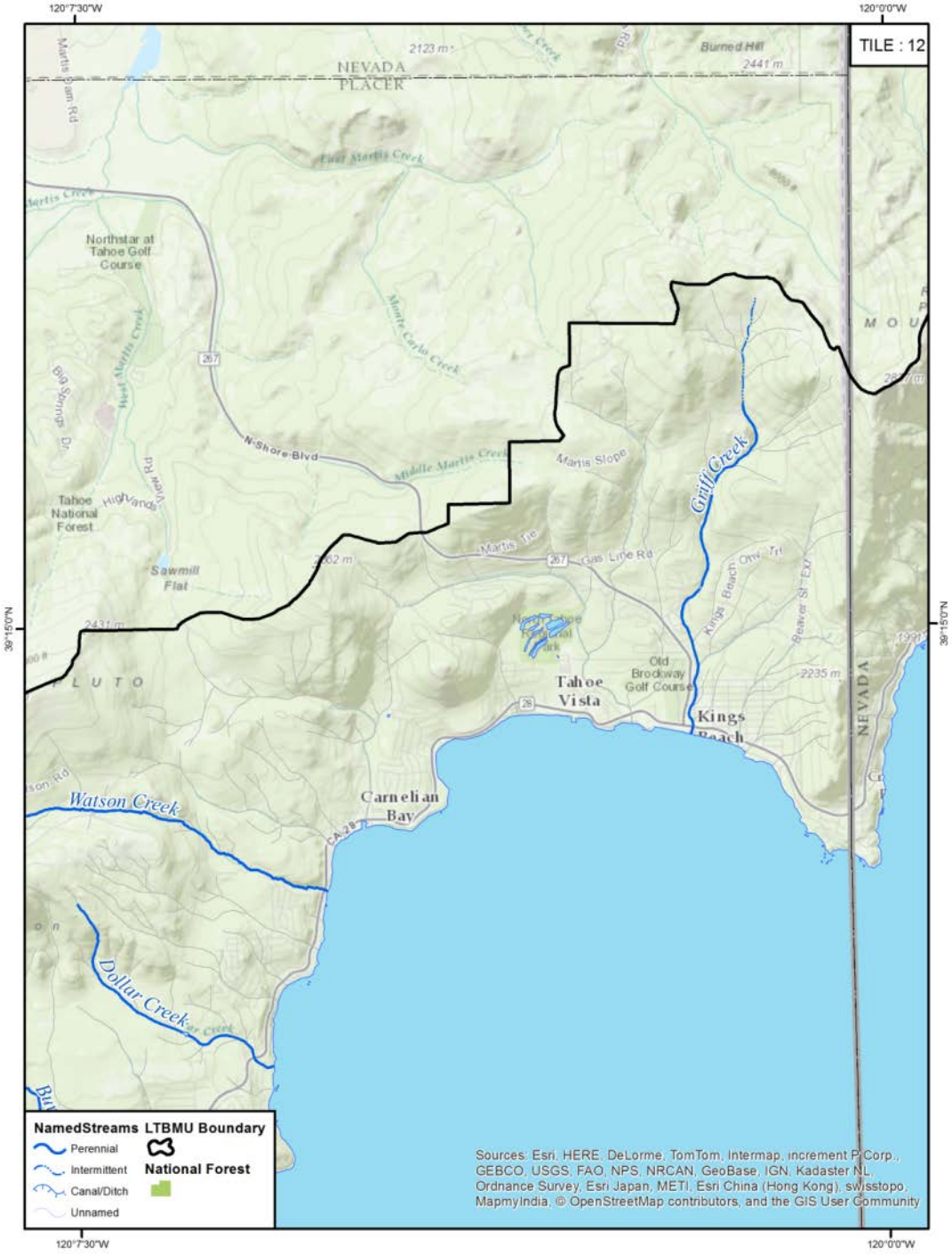

120°0'0"W
TILE : 7
US-Highway-50
US-50
Saxon Creek
Grass Lake Creek
Upper Truckee River
Big Meadow Creek
Bryan Mdow
Scotts Lake
Maxwell Creek
EL DORADO
ALTITUDE
HOPE VALLEY
2930 m
2752 m
2716 m
2923 m
38°45'0"N
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community


120°7'30"W
TILE : 8
Tallac Creek
Taylor Creek
Cascade Creek
Maggies Peaks
Eldorado National Forest
Cathedral Creek
Tahoe Mountain
Gardner Mountain
Angora Creek
Glen Alpine Creek
Washoe Meadows State Park
Upper Truckee River
Lake Aloha
Lake of the Woods
DESOLATION VALLEY
Mt Ralston
2816 m
2564 m
2222 m
2968 m
38°52'30"N
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community


120°7'30"W
TILE : 9
Madden Creek
Homewood Canyon
W Lake Blvd
PLACER
Sugar Pine Point State Park
McKinney Creek
General Creek
Log Cabin Rd
Meeks Creek
Rubicon Creek
Bliss State Park
Paradise Flat
Emerald Point
Rubicon River
Phipps Creek
CA-89
2529 m
2834 m
2796 m
1904 m
39°0'0"N
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community


120°15'0"W
120°7'30"W
39°7'30"N
TILE : 10
Burton Creek State Park
Alpine Meadows
Alpine Meadows Rd
Rear Creek
Thunder Chute
Mt Watson Acc
Mt Watson Blvd
Tahoe City Golf Course
Twin Crags
Truckee River
Dollar Peak
Deep Pit
Page Meadows
Ward Peak
2627 m
Courchevel Rd
Ward Creek Rd
Ward Creek
Rock
Stanford
N Lake Blvd
2700 m
Blackwood Creek
2537 m
Blacker Pass
North Fork Blackwood Creek
Middle Fork Blackwood Creek
Blackwood Ridge
Madden Creek
W Lake Blvd
Homewood Canyon
PLACER
2563 m
2529
Madden Creek
General Creek
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community


120°7'30"W
39°15'0"N
TILE : 11
Lookout Mountain
Tahoe National Forest
Sawmill Flat
Slaughterhouse Canyon
Slaughterhouse Rd
West Martis Creek
Highlands View Rd
N Shore Blvd
Sawtooth Ridge
MOUNT LUTO
Little Chief
Big Chief
Mt Watson Rd
Watson Creek
Carnelian Bay
CA-28
Watson Peak
Painted Rock
Rocky Point
Mount Watson
Dollar Creek
Burton Creek
Antone Meadows
Burton Creek State Park
Bear Creek
Thunder Cliffs
Mt Watson Rd
Mt Watson Blvd
Tahoe City Golf Course
Twin Crags
Truckee River
2464 m
2431 m
2624 m
2270 m
1911 m
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community


120°7'30"W
120°0'0"W
TILE : 12
39°15'0"N
NEVADA PLACER
Burned Hill
2441 m
2123 m
Martis Dam Rd
East Martis Creek
Martis Creek
Northstar at Tahoe Golf Course
Monte Carlo Creek
267
N Shore Blvd
Middle Martis Creek
Martis Slope
Griff Creek
Big Springs Dr
West Martis Creek
Tahoe National Forest
Highlands Rd
Martis Trl
Gas Line Rd
Kings Beach Otw Trl
Beaver St Ext
Sawmill Flat
2431 m
2362 m
PLUTO
Tahoe Vista
Old Brockway Golf Course
28
Kings Beach
2235 m
1991
NEVADA
Watson Creek
Carnelian Bay
CA-28
Dollar Creek
NamedStreams
Perennial
Intermittent
Canal/Ditch
Unnamed
LTBMU Boundary
National Forest
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Appendix C: Evaluation of Areas for Potential Wilderness

Introduction

This document describes the process used to evaluate the wilderness potential of areas on the Lake Tahoe Basin Management Unit (LTBMU).

The March 2009 inventory conducted according to Forest Service Handbook 1909.12, Chapter 70, 2007 is the basis for this evaluation. The LTBMU was evaluated to determine landscape areas that exhibited inherent basic wilderness qualities such the degree of naturalness and undeveloped character. In addition to the wilderness qualities an area might possess, the area must also provide opportunities and experiences that are dependent on and enhanced by a wilderness environment and area boundaries that could be managed as wilderness. It was determined that areas adjacent to existing wilderness and existing Inventoried Roadless Areas (IRAs) were areas were most likely to have the characteristics described above. Other areas around the basin exhibited some of the required characteristics but not enough to be qualified for a congressional wilderness designation. Six areas were identified and evaluated.

The analysis is based on GIS mapping of existing wilderness and inventoried roadless area polygon data, adjusted based on local knowledge.

Three tests were used—capability, availability, and need—to determine suitability as described in Forest Service Handbook 1909.12, Chapter 70, 2007. In addition to the inherent wilderness qualities an area might possess, the area must provide opportunities and experiences that are dependent on and enhanced by a wilderness environment. The area and boundaries must allow the area to be managed as wilderness.

Capability is defined as the degree to which the area contains the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness.

The **availability** determination is conditioned on the value of and need for the wilderness resource compared to the value of and need for the area for other resources.

Need is the determination that the area should be designated as wilderness through an analysis of the degree the area contributes to the local and national distribution of wilderness.

Overview of Areas Evaluated

Desolation Wilderness Additions - Pyramid (0519-001)

The Pyramid area encompasses 7,732 acres. This segment of land is contiguous to the eastside of the Desolation Wilderness.

The location of the Pyramid addition runs along the eastern border of the Desolation Wilderness. It would extend the Desolation Wilderness boundary closer to Lake Tahoe and would provide a buffer between Lake Tahoe and the present Wilderness. It would also include portions of the watersheds of General Creek and Meeks Creek to the north as well as abutting boundaries with D.L. Bliss and Sugar Pine Point California State Parks.

The Pyramid area is accessed by numerous trailheads and roads that originate from Highway 89. Access roads include the Angora Lookout FS1214, Fallen Leaf road, Glen Alpine Trailhead road 12N16, Mt. Tallac FS1306, Meeks Creek FS14N42 and several other roads that access summer recreation residences. Major trailheads that access the Pyramid area are Glen Alpine, Mt. Tallac, Bayview, Eagle Falls, and Meeks trailheads.

Geology of the Pyramid area is dominated by the granite batholiths indicative of the Desolation Wilderness. The Pyramid area includes some major peaks in the Basin: Echo Peak (8,895 ft), Flagpole Peak (8,363 ft), and Angora Peak (8,588 ft). A majority of the topography is steep with slopes greater than 30%, which includes the easterly toe slopes of Rubicon Peak, Jakes Peak and Mt. Tallac. Elevations within the Pyramid area range from 8,900 ft to 6,300 ft.

Vegetation types within the Pyramid area vary from predominately white and red fir, sub-alpine conifer in the northern reaches to montane chaparral, Jeffery pine and lodgepole pine in the southern part.

Little recreational use takes place during the summer in most of the Pyramid area, and consists of trails and roads that are used to access Desolation Wilderness. However, winter recreation in the form of backcountry skiing is growing exponentially in popularity and several areas of the Pyramid area see quite significant use. These include Jakes Peak, Flagpole Peak, Mt. Tallac, and the Angora area. There is no detailed analysis at this time on specific numbers.

The area’s appearance ranges from densely forested slopes in the northern reach to sparse stands of trees and barren granite slopes of rock and chaparral in the mid to southern segment. The Pyramid area incorporates the dramatic backdrop that borders Lake Tahoe and is one of the majestic view sheds in the western United States.

Cascade Falls and the dramatic summits of Angora Peak, Echo Peak and Flagpole Peak are key attractions. The cliffs found in this area provide valuable habitat for Peregrine falcon. Mature stands of timber also provide habitat for the Northern goshawk.

Dardanelles Roadless Area (0519-002)

Dardanelles Roadless Area, commonly known as "Meiss Country" after a local ranching family's summer range, contains 14,227 acres. This roadless area lies in the southernmost tip of the Lake Tahoe Basin. It is roughly bounded by Highway 50 and 89 on the north and Highway 88 to the east and south. The Lake Tahoe Basin is defined by the parallel Sierra Crest and Carson Range. These converge at Carson Pass, and, in the "V" formed by this merging, the Upper Truckee River begins. Dardanelles lies in the high meadow at the Truckee River's headwaters. The Truckee headwaters flow through what is known as Meiss Meadows, an extensive meadow system that is bordered by the high peaks named Stevens and Red Lakes Peaks. It was from Red Lake Peak that the first European explorers John C. Fremont, and his cartographer Charles Preuss, viewed Lake Tahoe.

Elevations range from a low of 6,400 feet in Christmas Valley on the southern edge of the settled area of the Tahoe Basin, to the 10,000-foot summit of the Carson Range. Precipitation is 40-50 inches per year. The ecosystem is classified as Sierra Forest Province (Bailey) with small portions of lodgepole pine/sub-alpine forest (Kuchler). Two-thirds of the land in Dardanelles is barren, brush, sub-alpine, lodgepole pine or large productive meadows. Over three quarters of the slopes are above 30%.

Dardanelles is second only to Desolation Wilderness in popularity for non-motorized backcountry recreation. It sees prolific hiking, equestrian use and in recent years increased mountain bike use. Trailheads at Echo Summit, Big Meadow, Carson Pass, Christmas Valley and Sayles Canyon provide access to Dardanelles, and are accessed from Highways 50, 89 and 88.

There is good opportunity for primitive recreation. The southern part, where the Upper Truckee begins, has broad meadows with shallow lakes and unobstructed views of the high alpine ridges to the east and west. The northern part is more steeply dissected, with granite terrain and the cliffs of the Sierra Crest to the west and dramatic outcrops of tertiary volcanic breccias to the east. The pocket lakes scattered through this varied terrain are isolated and relatively undisturbed. Red Lake Peak and the nearby Stevens Peak are the highest peaks in the area and are formed of mudflow breccias as its geologic parent material. The two peaks are, in this respect, a unique habitat.

Key attractions are the numerous lakes, prolific wildflowers and expansive meadows that the Upper Truckee flows through. The Dardanelles area has a high degree of integrity and apparent naturalness, fostered by the physical enclosure of the landscape: very little of the outside world can be seen or heard while traveling in the heart of Dardanelles. Although non-conforming with wilderness standards, the remarkable "Meiss cabin," built in 1878, still stands in Meiss Meadow. In 1998, seven miles of the Upper Truckee River was recommended to be added to the National Wild and Scenic River inventory as a “Wild” river. It has since been managed to protect its Outstanding Remarkable values to maintain its eligibility.

Freel Roadless Area (0519-003)

The Freel Roadless area includes 15,341 acres. Of this total acreage only 800 acres lie within ¼ mile of a road. Freel Peak (10,881 ft) is the highest point in the Lake Tahoe Basin and is the dominant feature of this roadless area. This section resides in the Carson Range looming over the South Lake Tahoe and Meyers.

The Freel potential wilderness area is accessed from the north by the High Meadows Road FS 12N05, Star Lake Trail 18EO1 and by the Tahoe Rim Trail from the South Kingsbury Trailhead. Main access points to the southern section of the area are the Oneidas Road FS 1201, Hell Hole Road, Saxon Road and related trails Hell Hole 18E 12, Saxon 18E 13 and the Tahoe Rim Trail which is accessed from the Big Meadow Trailhead on Highway 89. FS25 is another major access point from the south side of Luther Pass which runs within the Humboldt-Toiyabe National Forest and leads to the south side of Armstrong Pass. This primarily is used by mountain bikers who are accessing Saxon Creek trail (Mr. Toad's Wild Ride), a very popular downhill ride.

The higher elevations of the roadless area have distinctive visual quality: high, barren peaks, wind-deformed trees, and panoramic views of regional scale down the Sierra Crest and across the basin and range country of Nevada. At the head of Cold Creek on the northern flank of Freel Peak is Star Lake, the highest lake in the Basin. Unsurpassed views of Lake Tahoe exist, in which the Crystal Range in Desolation Wilderness serves as a dramatic backdrop. The deep, decomposed granite soils conceal groundwater well below the surface. Hell Hole basin, with its cliffs and boggy meadows, and Freel meadows typify the spring fed surface water of the area. Over 80% of this area has slopes over 30%.

The ecosystem is classified as the Northern Sierra Nevada physiographic province (Bailey classification M261 0). The western portion is representative of a mixed conifer forest (Kuchler type 5) and the eastern is lodgepole pine-sub-alpine forest (Kuchler type 8).Over half of the area is timbered with species such as lodgepole pine, red fir and sub-alpine conifer. Seven percent of the area is montane chaparral and sagebrush, 3% riparian and less than 1 % aspen. Thirty-nine percent of the area is barren or has sparse high elevation lodgepole and whitebark pine.

Summer use levels have increased since the release of the previous LTBMU forest plan. The completion of the Tahoe Rim Trail from Kingsbury West Trailhead to Big Meadow has made the area more accessible to backpackers, mountain bikers and day hikers. Also, development of new trails from Oneidas Road up to Armstrong Pass and further improvements to the Saxon Creek trail have increased recreation opportunities for mountain biking. The Saxon Creek trail is now one of the most popular mountain bike trails on the south shore of Tahoe and has gained region-wide popularity among this user group. Winter use includes snowmobile and backcountry skiing in parts of the Freel Roadless Area. Currently, snowmobiles are allowed throughout the Saxon Creek and Hell Hole drainages. The Saxon Creek area receives consistent use when snow levels make it possible to ride from bordering communities. The segment of roadless area north of Freel Peak including High Meadows and the south side of Heavenly ski area is currently closed to motorized use.

The distance from the perimeter of this area to the core is short. Occasional views of the nearby urban areas and of airplanes at the Lake Tahoe Airport detract from the experience of solitude.

Combining the Freel Roadless area (15,341 acres) with the Jobs Peak Roadless area (24,052 acres) to the east (part of the Humboldt-Toiyabe National Forest), would connect a large

contiguous area of roadless terrain and would include a substantial part of the Carson Range as wilderness.

Key attractions of this area are Freel Peak (the highest mountain in the Lake Tahoe Basin), Star Lake (the highest lake in the Basin), high alpine meadows and an uncommon community of alpine cushion plants (draba asterophora var. asterophora) that grow on a 600-acre area around the summit of Freel Peak. The views from this area are among the most majestic found in the Basin.

Lincoln Creek Roadless Area (0519-004)

This segment lies along the east shore of Lake Tahoe in Nevada.

The Lincoln Creek Roadless area has a total of 6,562 acres. It lies between U.S. Highway 50 to the west, the Genoa Peak road to the east, Kingsbury Grade on the south, and Highway 50 (Spooner Summit) to the north. Access to the area is from the Genoa Peak Road FS14N32, FS14N33 and the multitude of suburban roads that service the subdivisions that border this area on the west and south boundaries of the segment. The Tahoe Rim Trail runs through the south east side of the segment and can be accessed by the Spooner Summit South trailhead and the Kingsbury North Trailhead. The Tahoe Rim Trail travels in this area for a short length through the southeast corner of the segment.

Lincoln Creek is unglaciated, lower elevation topography with a lack of lakes, high peaks or cliffs. The area is composed of numerous small hills containing granite outcroppings and intermixed timber. The area is bisected from east to west by many steep, V-shaped drainages. Nearly all the land has a high erosion hazard, and 80% of the area has slopes greater than 30%. Elevation ranges from 6,400 feet near Lake Tahoe to slightly over 8,000 feet on the east.

The ecosystem is classified as Sierran Forest Province (Bailey classification M261O) with a mixed conifer forest (Kuchler type 8). The Lincoln Creek area was logged intensely in the late 1800s. The second growth stand is dominated by a Sierran mixed conifer stand and pure stands of red fir, jeffery and lodgepole pine. There is minor acreage of montane riparian and montane chaparral.

Compared to other areas of the Tahoe Basin, this area has low recreational opportunity and use. The Tahoe Rim Trail is popular, but only runs through a short length of this area. It is estimated that most recreation comes from local neighborhoods in the form of short hikes, bike rides and cross-country skiing. Snowmobile use is allowed within the entire area.

The opportunities for solitude are moderate. The area is small and narrow, allowing a visitor to get only about a mile away from a road. Road noise can be audible and views of

urban development and Heavenly ski area are intrusive. The broken topography and the uniform vegetative cover do provide some visual and auditory screening from these intrusions. Because the area occupies an intermediate position on a continuous slope, it has "no top or bottom" and therefore lacks physiographic unity.

The existing boundary is complicated and is bordered nearly on all sides by development and uses that are non-conforming with wilderness. With the exception of the Lincoln Creek area itself, surrounding lands offer little primitive value or undeveloped nature.

The scenic landmark of the area is a large outcrop, Castle Rock, which is near the boundary of the roadless area, but not included within the Lincoln Creek section. Views of Lake Tahoe, the Carson Valley and the Sierra Crest are spectacular.

Mt. Rose Wilderness Area Additions (0519-005)

The additions to the Mt. Rose Wilderness within the LTBMU total 473 acres. There are two additions, one expanding the western border of the LTBMU managed section of the Mt. Rose Wilderness, and a larger segment on the north east side of the LTBMU managed area. The western segment runs roughly north to south from Mt. Baldy along the present boundary in a narrow strip. The northeastern section occupies the land east of Relay Peak and north of Ginny and Incline Lakes. Road FS 17N 85 to the relay communication station runs along the northern boundary of this segment. In this document, the western addition is identified as the Mt. Baldy Addition and the eastern addition, the Relay Addition.

The Mt. Baldy Addition can be directly accessed from the Tahoe Rim Trail. The Mt. Baldy Addition runs down the top of the southerly reaching ridge. Baldy and the trail runs right through the northern edge of the addition. This addition could also be potentially accessed by roads FS16N54 and FS16N52, which come within a mile of the area, but do not offer direct access.

Access to the Relay Addition would be from FS 17N85 (the relay communication station road) and from the Tahoe Rim Trail.

These additions incorporate segments of land that are part of the satellite peaks of Mt. Rose (itself entirely outside of the LTBMU). Relay Peak at 10,366 ft. is second only to Freel Peak in elevation. Unlike the other prominent peaks (in the Desolation and Freel areas), these summits rise continuously three to four thousand feet from the surface of Lake Tahoe. Visual quality is distinctly alpine, though not markedly glaciated in appearance. The treeless upper slopes, when snow covered, are a visual apex of Tahoe's north shore. Because the peaks are sometimes less than two miles from the shoreline, the views of Lake Tahoe from their summits is awesome. The sparse vegetation on the decomposed granite soils is relieved at intervals by small, lush pocket - meadows and ponds at 8,900 to 9,200 feet and by frequent massive rock outcrops and cliff-bands.

The predominantly south facing slopes are dry, sandy and support sparse stands of lodgepole and whitebark pine. Intermixed are slopes of sagebrush and montane/mixed chapparal. The upper slopes are nearly barren of vegetation. The ecosystem is classified as Kuchler type 8, lodgepole pine/sub-alpine forest. Snowmobile use is intensive within the Relay Addition. It is very popular and occurs through out the identified Relay Addition. Backcountry skiing is also a favorite winter time activity. Summer use entails both overnight and day hikers on the Tahoe Rim Trail. Intrusion into the present wilderness by mountain bikers continue to present a management problem. The Mt. Baldy addition in all likelihood sees little use other than perhaps backcountry skiing in the winter.

These additions would expand the Mt. Rose Wilderness and add to an already permanently protected high elevation landscape. Opportunities for solitude are high. The Mt. Rose wilderness occupies many square miles at the head of Gray and Bronco Creeks, and this area itself is buffered by the little used lower drainages of these creeks extending ten or fifteen miles north to the Truckee River canyon. Immediately south is Incline Village which, despite its proximity, generates very few hikers willing to climb the steep slopes. Skiers on the other hand find the area well suited for winter backcountry travel.

The Granite Chief Wilderness Additions (0519-006)

The additions to the Granite Chief Wilderness within the LTBMU total 1,160 acres in two separate segments that are bisected by CA State owned land. The additions border the present Granite Chief Wilderness along its east side and run roughly along this boundary from Barker Pass to the south up to Alpine Meadows ski area (Ward Creek Blvd.) to the north. For ease of description we will refer to the addition as Granite Chief North and Granite Chief South.

Access to Granite Chief North would be from the Alpine Meadows ski area road.

The Pacific Crest Trail/Tahoe Rim Trail runs along the Sierra Crest/wilderness boundary and presents the best opportunity to access both Granite Chief additions. The "Stanford Rock trail" also provides access to the additions from the east with a northerly spur 16E07 to the northern addition and a southerly spur 16E08 that reaches the southern addition. The Blackwood Canyon/Barker Pass road affords the closest access at Barker Pass to the Granite Chief South addition.

The geography of these additions is of a predominately eastern aspect with sections of steep granitic faces and cliffs. The western borders of the additions start at ridge top elevations of around 8,300-8600 feet and run down slope to the east to elevations around 6800-7600 feet. Tributaries of Blackwood creek start within Granite Chief South and flow from steep slopes all over 30% in grade.

A majority of the additions vegetation cover is White Fir with Sierran Mixed Conifer, Sub-alpine Conifer and Montane/Mixed Chaparral dominating the drier southerly slopes. The ecosystem could be classified as Sierran Forest Province (Bailey).

Granite Chief South sees moderate use on the Pacific Crest Trail/Tahoe Rim Trail with overnight backpackers and day hikers alike. The Granite Chief North addition sees more backcountry skiing use, as it is easily accessible from Alpine Meadows ski area. Overall it is estimated that these two additions see low to slightly moderate use year round and remain in a very natural state.

Granite buttes, rolling faces intermixed with volcanic outcroppings and soils make up the landscape here. There are dense stands of White Fir and Mixed Conifers, as well as sparse exposed slopes mostly composed of bedrock and dispersed sagebrush and chaparral vegetation. Pocket meadows are found sporadically where wetter conditions persist. It resides as the backdrop for Tahoe City and the beginning of the Granite Chief Wilderness.

These additions offer an expansion of the present wilderness to the east. The crest which the PCT runs along offers good views of Lake Tahoe and up the Truckee River canyon. A majority of the terrain is forested and is typical of the northeast shore of Lake Tahoe.

Table C 1. Overview of LTBMU Wilderness

Numerical ID	Area Name	GIS acreage	State	Area> 5000 ac, undeveloped?	Area<5000 ac, adjacent Wilderness?	P or SPNM ROS setting	Carry forward for attribute rating?
0519-001	Pyramid LTBMU	7,732	CA	X	X	SPNM	X
-	Pyramid El Dorado NF	28,104	CA	X	X	SPNM	
0519-002	Dardanelles LTBMU	14,227	CA	X		SPNM	X
	Dardanelles El Dorado NF	8,116	CA	X		SPNM	
0519-003	Freel LTBMU	15,341	CA	X		SPNM	X
-	Jobs Peak Humboldt-Toiyabe NF	24,052	CA/NV	X		SPNM	
0519-004	Lincoln Creek	6,562	NV	X		SPNM	X
0519-005	Mt. Rose LTBMU	473	NV		X	SPNM	X
-	Mt. Rose Humboldt-Toiyabe & Tahoe NF	19,871	NV	X		SPNM	
0519-006	Granite Chief LTBMU	1,160	CA		X	SPNM	X
	Granite Chief Tahoe NF	6,471	CA		X	SPNM	

Notes: P – Primitive; SPNM – Semi-Primitive Non-Motorized

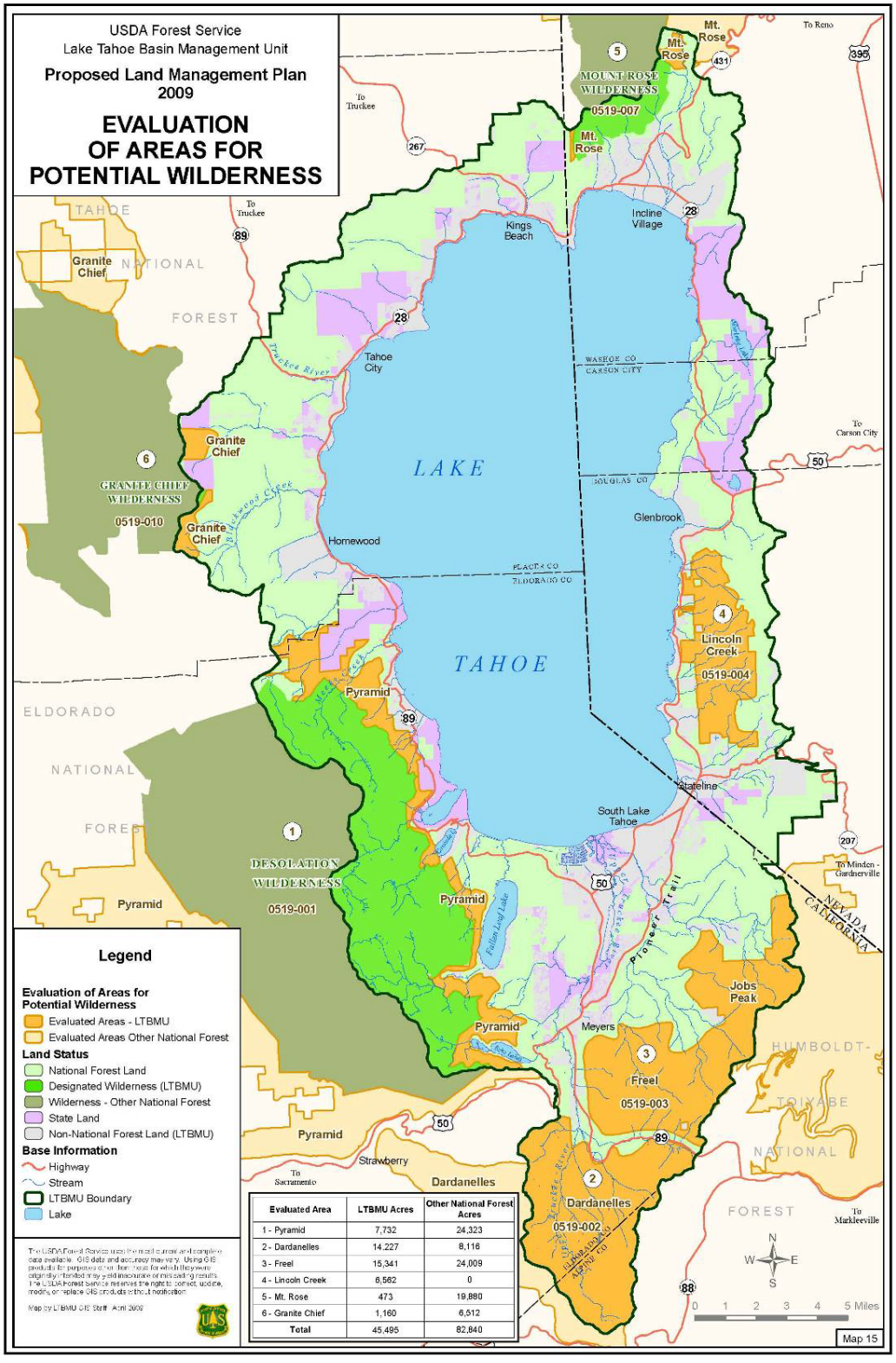


Figure C 1. LTBMU Evaluated Areas and Land Status Map

Capability

Per Forest Service Handbook 1909.12 Chapter 70, Section 72.1, each potential area's capability for wilderness is described by basic characteristics that make the area appropriate and valuable for wilderness, regardless of the area's availability or need. The following characteristics were addressed:

a) **Naturalness of the area**; the degree to which humans and past or present human activity have affected natural ecological processes and conditions.

b) **Undeveloped**; the degree to which the area's appearance is appropriate and valuable for wilderness.

c) **Opportunities** for experiences often unique to wilderness such as solitude, self-reliance, adventurous and challenging experiences, and primitive recreation.

d) **Special features and values** of the area including those of ecological, geological, scientific, educational, recreational, scenic, or historical value, rare and endangered plant and animal species and other wildlife.

e) A description of **size and shape** to include the implications of the area's size, shape, and juxtaposition to external influences on the wilderness attributes.

f) A summary of the **boundary conditions, needs, and management requirements** should the area be designated for wilderness. Addressing whether or not boundary changes would enhance the wilderness characteristics or whether or not it would be possible to use boundary modifications to separate incompatible activities from those characteristics.

In order to evaluate the basic characteristics, they were broken down into elements, activities, or features that describe the basic characteristics and provide a basis for rating. Since criteria were not of equal importance, criteria are in order of priority for each element, activity, or feature. Resource specialists evaluated each criterion, rating each as high, moderate, or low.

Table C 2. Wilderness Capability Ratings (Desolation-Pyramid Roadless)

Desolation Wilderness Addition - Pyramid Roadless (0519-001)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**M**
1. Diverse community of native mammals, birds, and fish.	**1. Moderate variety of native mammals, birds, and fish.**	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	2. Known moderate variety of threatened and endangered species.	**2. Low variety of threatened and endangered species.**	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	3. Streams are important to historic distribution of Lahontan cutthroat trout.	**3. Streams are not important to historic distribution of Lahontan cutthroat trout.**	
4. Provides critical linkage between wildlife areas or habitats.	4. Provides linkage between wildlife areas or habitats.	**4. Does not provide linkage between wildlife areas or habitats.**	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**M**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	**7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.**	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.	**8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.**	
9. Only a minor improvement, e.g., trail.	**9. Several minor improvements.**	9. Major improvements, e.g., power line, dam, road or structures.	
C. Opportunities for Primitive Recreation			
Opportunity for solitude			**L**
10. Feeling of being alone or remote from civilization.	**10. Feeling of being alone is possible but signs of civilization are likely.**	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	**11. Recreation use by other parties is moderate.**	11. Recreation use by other parties is high.	

Desolation Wilderness Addition - Pyramid Roadless (0519-001)			
High	Moderate	Low	Rating
Primitive Type Recreation Activities			
Hiking/backpacking opportunities			
12. Multiple system trails into area.	12. At least one system trail into area.	12. No system trails that are maintained.	
13. Several dispersed camping sites that are routinely used.	**13. At least one dispersed camping site that is occasionally used.**	**13. No dispersed camping sites that are used, but progressive camping may occur.**	
Fishing opportunities			
14. Good populations of native game fish.	14. Fair populations of native game fish.	**14. Low populations of native game fish.**	
Cross country Skiing and snowshoeing opportunities			
15. Easily accessible in winter by motorized wheeled vehicles.	15. Snow keeps wheeled vehicles several miles from area, but access is possible by snowmobile.	**15. Area is difficult or rarely accessed by snowmobile.**	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	16. Terrain is moderate or vegetation brushy that impedes cross country travel.	**16. Terrain is gentle and vegetation open to allow easy cross country travel.**	
17. Snowmobile use prohibited, or if allowed, rarely used.	17. Snowmobile use restricted to two months or less, or on half or less of the area.	**17. Snowmobile use permitted.**	
D. Special Features and Values			
Scenic features			**L**
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	**18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.**	1820. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.	
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	**19. Area has no permanent lakes but may have perennial creeks or ponds.**	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	**20. No major or very few minor other special features.**	
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.	**21. Does not contain an established, candidate, or eligible special area.**	

Desolation Wilderness Addition - Pyramid Roadless (0519-001)			
High	Moderate	Low	Rating
Scientific, educational, or historical values			
22. Several significant scientific, educational, or historical values have been identified in the area.	22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.	**22. No scientific, educational, or historical value has been identified in the area.**	
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**L**
24. Size and shape of area allows effective management.	24. Size or shape will affect manageability but can be mitigated by boundary changes.	**24. Size is small or has irregular shape that makes management difficult.**	
25. Minimum activity in surrounding area that affects manageability.	25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.	**25. Activity in surrounding area will affect the manageability of the inventoried area.**	
26. Located adjacent to existing wilderness or other inventoried areas.	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	26. Isolated, small parcel of land.	
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	27. More than half the boundary follows a feature that can be easily found and identified on the ground.	**27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.**	
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.	**29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.**	
30. Boundary totally on national forest and not adjacent to private property.	**30. Boundary follows property line forming irregular shape.**	30. Boundary crosses private property so there are inholdings along the boundary.	

Desolation Wilderness Addition - Pyramid Roadless (0519-001)			
High	Moderate	Low	Rating
31. No inholdings.	**31. Few small inholdings may be present.**	31. Several small or one large inholding.	
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	32. Human improvement places user on notice of prohibited use, e.g., a sign.	**32. Human improvement not a deterrent may provide point of access of prohibited use.**	

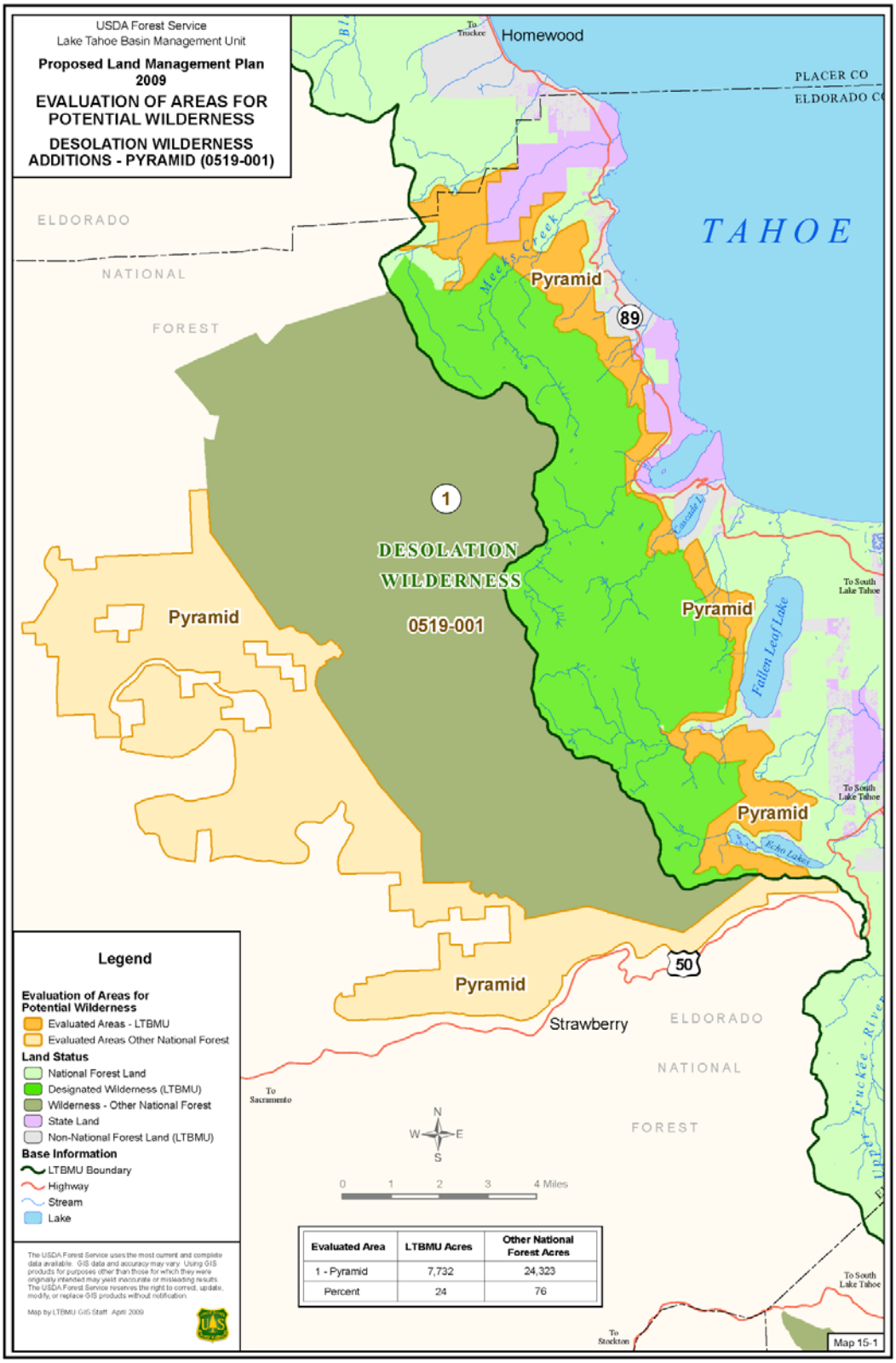


Figure C 2. Desolation Wilderness Addition - Pyramid Roadless Map (0519-001)

Table C 3. Wilderness Capability Ratings (Dardanelles Roadless)

Dardanelles Roadless (0519-002)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**H**
1. Diverse community of native mammals, birds, and fish.	1. Moderate variety of native mammals, birds, and fish.	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	**2. Known moderate variety of threatened and endangered species.**	2. Low variety of threatened and endangered species.	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	**3. Streams are important to historic distribution of Lahontan cutthroat trout.**	3. Streams are not important to historic distribution of Lahontan cutthroat trout.	
4. Provides critical linkage between wildlife areas or habitats.	**4. Provides linkage between wildlife areas or habitats.**	4. Does not provide linkage between wildlife areas or habitats.	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**H**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.	8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.	
9. Only a minor improvement, e.g., trail.	**9. Several minor improvements (Historic Meiss cabin/barn, circa 1878).**	9. Major improvements, e.g., power line, dam, road or structures.	
C. Opportunities for Primitive Recreation			
Opportunity for solitude			**M**
10. Feeling of being alone or remote from civilization.	10. Feeling of being alone is possible but signs of civilization are likely.	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	**11. Recreation use by other parties is moderate.**	11. Recreation use by other parties is high.	
Primitive Type Recreation Activities			

Dardanelles Roadless (0519-002)			
High	Moderate	Low	Rating
Hiking/backpacking opportunities			
12. Multiple system trails into area.	12. At least one system trail into area.	12. No system trails that are maintained.	
13. Several dispersed camping sites that are routinely used.	13. At least one dispersed camping site that is occasionally used.	13. No dispersed camping sites that are used, but progressive camping may occur.	
Fishing opportunities			
14. Good populations of native game fish.	**14. Fair populations of native game fish.**	14. Low populations of native game fish.	
Cross country Skiing and snowshoeing opportunities			
15. Easily accessible in winter by motorized wheeled vehicles.	15. Snow keeps wheeled vehicles several miles from area, but access is possible by snowmobile.	**15. Area is difficult or rarely accessed by snowmobile.**	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	68. Terrain is moderate or vegetation brushy that impedes cross country travel.	16. Terrain is gentle and vegetation open to allow easy cross country travel.	
17. Snowmobile use prohibited, or if allowed, rarely used.	17. Snowmobile use restricted to two months or less, or on half or less of the area.	17. Snowmobile use permitted.	
D. Special Features and Values			
Scenic features			**H**
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.	18. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.	
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	19. Area has no permanent lakes but may have perennial creeks or ponds.	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	20. No major or very few minor other special features.	
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	**21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.(Upper Truckee River segment)**	21. Does not contain an established, candidate, or eligible special area.	
Scientific, educational, or historical values			

Dardanelles Roadless (0519-002)			
High	Moderate	Low	Rating
22. Several significant scientific, educational, or historical values have been identified in the area.	**22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.**	22. No scientific, educational, or historical value has been identified in the area.	
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**H**
24. Size and shape of area allows effective management.	24. Size or shape will affect manageability but can be mitigated by boundary changes.	24. Size is small or has irregular shape that makes management difficult.	
25. Minimum activity in surrounding area that affects manageability.	25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.	25. Activity in surrounding area will affect the manageability of the inventoried area.	
26. Located adjacent to existing wilderness or other inventoried areas.(Freel)	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	26. Isolated, small parcel of land.	
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	**27. More than half the boundary follows a feature that can be easily found and identified on the ground.**	27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.	
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.	29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.	
30. Boundary totally on national forest and not adjacent to private property.	**30. Boundary follows property line forming irregular shape.**	30. Boundary crosses private property so there are inholdings along the boundary.	

Dardanelles Roadless (0519-002)			
High	Moderate	Low	Rating
31. No inholdings.	31. Few small inholdings may be present.	31. Several small or one large inholding.	
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	32. Human improvement places user on notice of prohibited use, e.g., a sign.	32. Human improvement not a deterrent may provide point of access of prohibited use.	

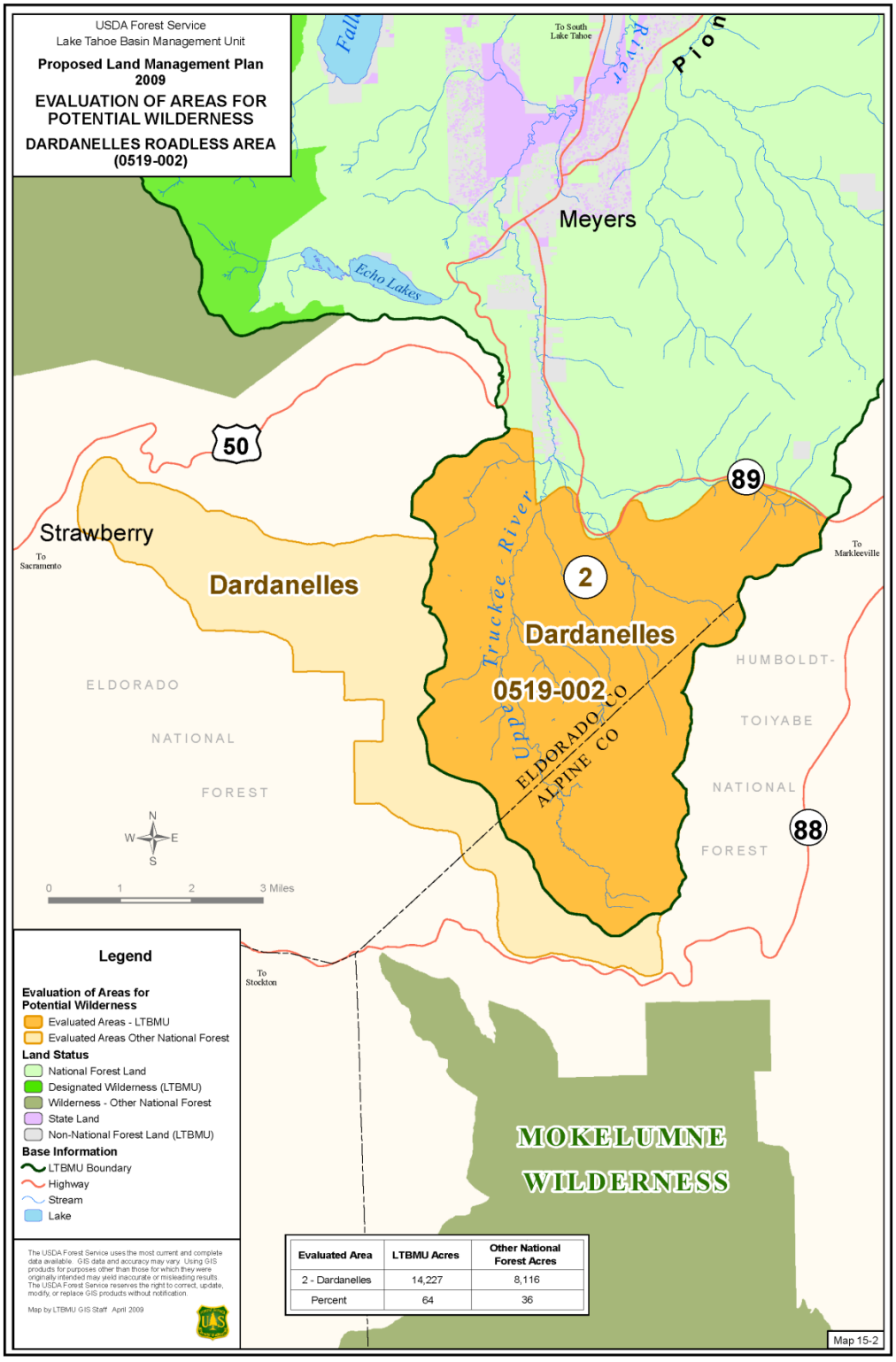


Figure C 3. Dardanelles Roadless Area Map (0519-002)

Table C 4. Wilderness Capability Ratings (Freel Roadless)

Freel Roadless (0519-003)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**M**
1. Diverse community of native mammals, birds, and fish.	**1. Moderate variety of native mammals, birds, and fish.**	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	**2. Known moderate variety of threatened and endangered species.**	2. Low variety of threatened and endangered species.	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	**3. Streams are important to historic distribution of Lahontan cutthroat trout.**	3. Streams are not important to historic distribution of Lahontan cutthroat trout.	
4. Provides critical linkage between wildlife areas or habitats.	**4. Provides linkage between wildlife areas or habitats.**	4. Does not provide linkage between wildlife areas or habitats.	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**M**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	**7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.**	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	**8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.**	8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.	
9. Only a minor improvement, e.g., trail.	**9. Several minor improvements.**	9. Major improvements, e.g., power line, dam, road or structures.	
C. Opportunities for Primitive Recreation			
Opportunity for solitude			**M**
10. Feeling of being alone or remote from civilization.	10. Feeling of being alone is possible but signs of civilization are likely.	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	11. Recreation use by other parties is moderate.	11. Recreation use by other parties is high.	
Primitive Type Recreation Activities			
Hiking/backpacking opportunities			

Freel Roadless (0519-003)			
High	Moderate	Low	Rating
12. Multiple system trails into area.	12. At least one system trail into area.	12. No system trails that are maintained.	
13. Several dispersed camping sites that are routinely used.	**13. At least one dispersed camping site that is occasionally used.**	13. No dispersed camping sites that are used, but progressive camping may occur.	
Fishing opportunities			
14. Good populations of native game fish.	14. Fair populations of native game fish.	**14. Low populations of native game fish.**	
Cross country Skiing and snowshoeing opportunities			
15. Easily accessible in winter by motorized wheeled vehicles.	**15. Snow keeps wheeled vehicles several miles from area, but access is possible by snowmobile.**	15. Area is difficult or rarely accessed by snowmobile. Limited e.g. High Meadows)	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	16. Terrain is moderate or vegetation brushy that impedes cross country travel.	**16. Terrain is gentle and vegetation open to allow easy cross country travel. (Limited, e.g. High Meadows)**	
17. Snowmobile use prohibited, or if allowed, rarely used.	17. Snowmobile use restricted to two months or less, or on half or less of the area.	**17. Snowmobile use permitted.**	
D. Special Features and Values			
Scenic features			**M**
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.	18. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.	
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	19. Area has no permanent lakes but may have perennial creeks or ponds.	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	20. No major or very few minor other special features.	
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.	**21. Does not contain an established, candidate, or eligible special area.**	
Scientific, educational, or historical values			

Freel Roadless (0519-003)			
High	Moderate	Low	Rating
22. Several significant scientific, educational, or historical values have been identified in the area.	**22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.**	22. No scientific, educational, or historical value has been identified in the area.	
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**M**
24. Size and shape of area allows effective management.	**24. Size or shape will affect manageability but can be mitigated by boundary changes.**	24. Size is small or has irregular shape that makes management difficult.	
25. Minimum activity in surrounding area that affects manageability.	**25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.**	25. Activity in surrounding area will affect the manageability of the inventoried area.	
26. Located adjacent to existing wilderness or other inventoried areas.	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	26. Isolated, small parcel of land.	
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	27. More than half the boundary follows a feature that can be easily found and identified on the ground.	**27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.**	
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	**29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.**	29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.	
30. Boundary totally on national forest and not adjacent to private property.	**02. Boundary follows property line forming irregular shape.**	30. Boundary crosses private property so there are inholdings along the boundary.	
31. No inholdings.	**31. Few small inholdings may be present.**	31. Several small or one large inholding.	

Freel Roadless (0519-003)			
High	Moderate	Low	Rating
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	**32. Human improvement places user on notice of prohibited use, e.g., a sign.**	32. Human improvement not a deterrent may provide point of access of prohibited use.	

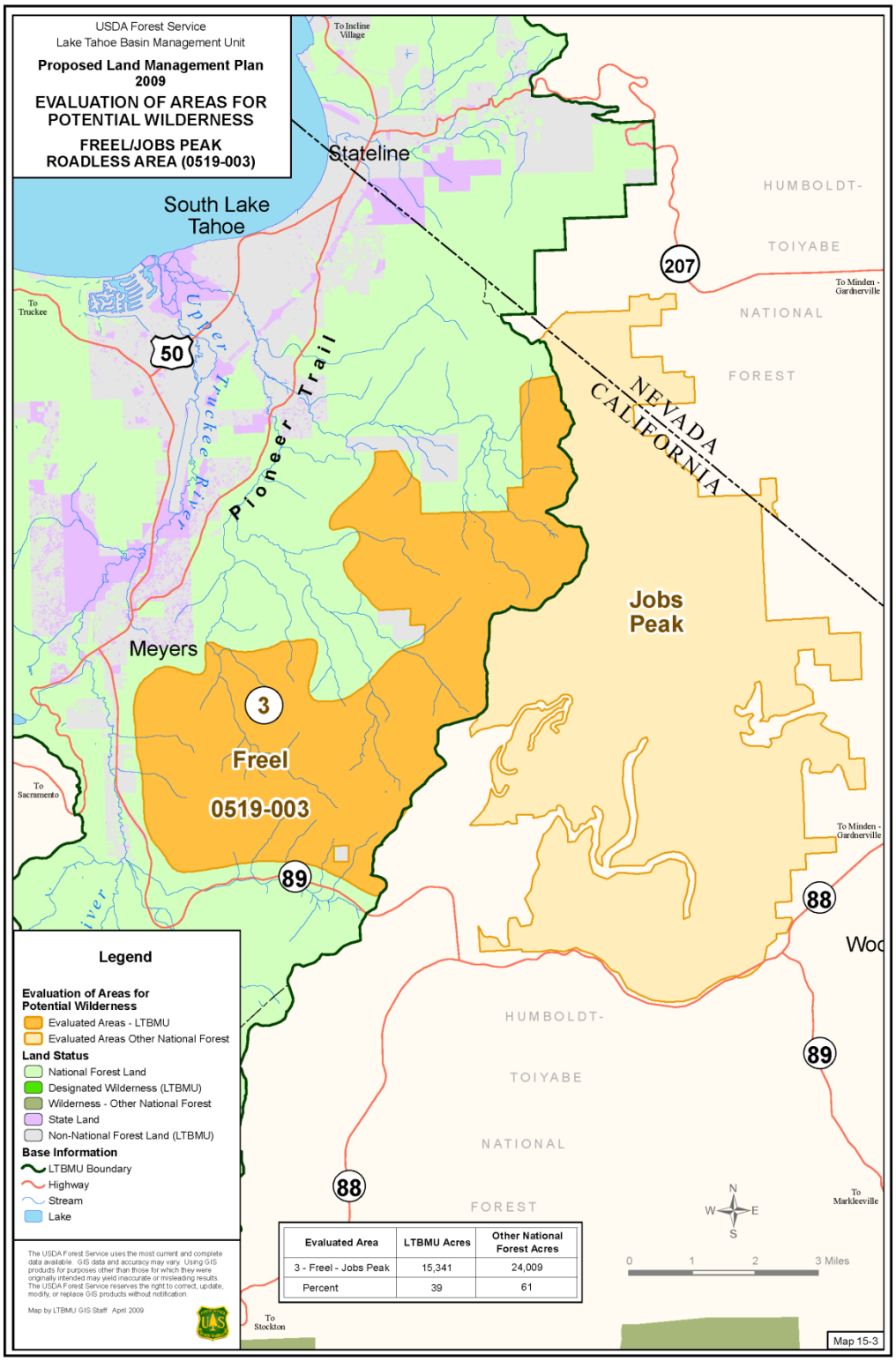


Figure C 4. Freel/Jobs Peak Roadless Area Map (0519-003)

Table C 5. Wilderness Capability Ratings (Lincoln Creek Roadless)

Lincoln Creek Roadless (0519-004)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**M**
1. Diverse community of native mammals, birds, and fish.	**1. Moderate variety of native mammals, birds, and fish.**	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	2. Known moderate variety of threatened and endangered species.	**2. Low variety of threatened and endangered species.**	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	3. Streams are important to historic distribution of Lahontan cutthroat trout.	**3. Streams are not important to historic distribution of Lahontan cutthroat trout.**	
4. Provides critical linkage between wildlife areas or habitats.	**4. Provides linkage between wildlife areas or habitats.**	4. Does not provide linkage between wildlife areas or habitats.	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**M**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	**7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.**	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.	**8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.**	
9. Only a minor improvement, e.g., trail.	**9. Several minor improvements.**	9. Major improvements, e.g., power line, dam, road or structures.	
C. Opportunities for Primitive Recreation			
Opportunity for solitude			**M**
10. Feeling of being alone or remote from civilization.	**10. Feeling of being alone is possible but signs of civilization are likely.**	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	**11. Recreation use by other parties is moderate.**	11. Recreation use by other parties is high.	
Primitive Type Recreation Activities			
Hiking/backpacking opportunities			

Lincoln Creek Roadless (0519-004)			
High	Moderate	Low	Rating
12. Multiple system trails into area.	12. At least one system trail into area.	12. No system trails that are maintained.	
13. Several dispersed camping sites that are routinely used.	13. At least one dispersed camping site that is occasionally used.	**13. No dispersed camping sites that are used, but progressive camping may occur.**	
Fishing opportunities			
14. Good populations of native game fish.	14. Fair populations of native game fish.	**14. Low populations of native game fish.**	
Cross country Skiing and snowshoeing opportunities			
15. Easily accessible in winter by motorized wheeled vehicles.	15. Snow keeps wheeled vehicles several miles from area, but access is possible by snowmobile.	**15. Area is difficult or rarely accessed by snowmobile.**	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	16. Terrain is moderate or vegetation brushy that impedes cross country travel.	16. Terrain is gentle and vegetation open to allow easy cross country travel.	
17. Snowmobile use prohibited, or if allowed, rarely used.	**17. Snowmobile use restricted to two months or less, or on half or less of the area.**	17. Snowmobile use permitted.	
D. Special Features and Values			
Scenic features			**L**
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.	**18. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.**	
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	**19. Area has no permanent lakes but may have perennial creeks or ponds.**	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	**20. No major or very few minor other special features.**	
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.	**21. Does not contain an established, candidate, or eligible special area.**	
Scientific, educational, or historical values			

Lincoln Creek Roadless (0519-004)			
High	Moderate	Low	Rating
22. Several significant scientific, educational, or historical values have been identified in the area.	22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.	**22. No scientific, educational, or historical value has been identified in the area.**	
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**L**
24. Size and shape of area allows effective management.	24. Size or shape will affect manageability but can be mitigated by boundary changes.	**24. Size is small or has irregular shape that makes management difficult.**	
25. Minimum activity in surrounding area that affects manageability.	25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.	**25. Activity in surrounding area will affect the manageability of the inventoried area.**	
26. Located adjacent to existing wilderness or other inventoried areas.	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	**26. Isolated, small parcel of land.**	
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	27. More than half the boundary follows a feature that can be easily found and identified on the ground.	**27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.**	
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.	**29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.**	
30. Boundary totally on national forest and not adjacent to private property.	30. Boundary follows property line forming irregular shape.	**30. Boundary crosses private property so there are inholdings along the boundary.**	
31. No inholdings.	31. Few small inholdings may be present.	**31. Several small or one large inholding.**	

Lincoln Creek Roadless (0519-004)			
High	Moderate	Low	Rating
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	32. Human improvement places user on notice of prohibited use, e.g., a sign.	32. Human improvement not a deterrent may provide point of access of prohibited use.	

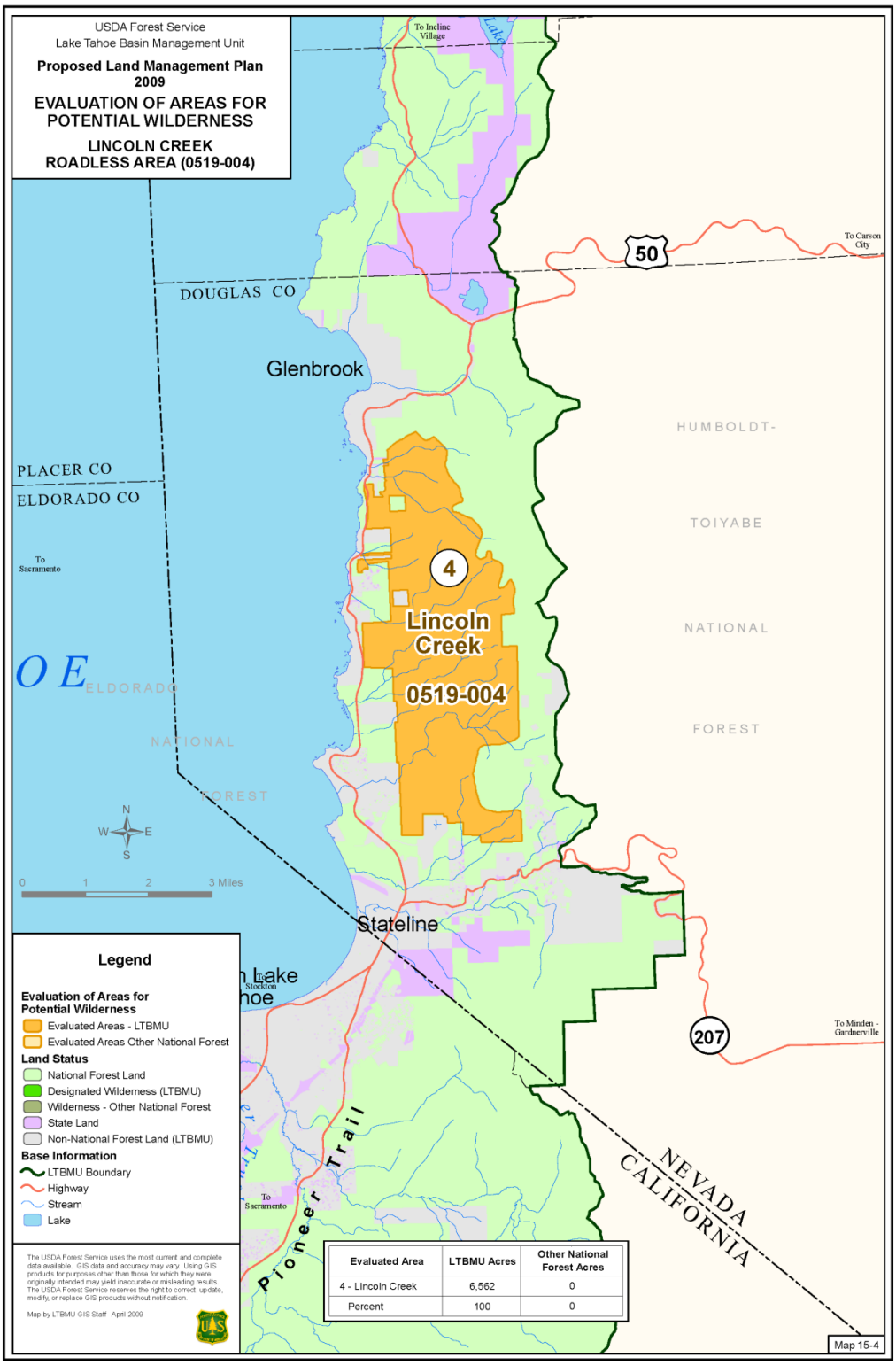


Figure C 5. Lincoln Creek Roadless Area Map (0519-004)

Table C 6. Wilderness Capability Ratings (Mt. Rose Wilderness and Roadless)

Mt. Rose Wilderness & Roadless Additions (0519-005)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**M**
1. Diverse community of native mammals, birds, and fish.	**1. Moderate variety of native mammals, birds, and fish.**	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	2. Known moderate variety of threatened and endangered species.	**2. Low variety of threatened and endangered species.**	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	3. Streams are important to historic distribution of Lahontan cutthroat trout.	**3. Streams are not important to historic distribution of Lahontan cutthroat trout.**	
4. Provides critical linkage between wildlife areas or habitats.	**4. Provides linkage between wildlife areas or habitats.**	4. Does not provide linkage between wildlife areas or habitats.	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**M**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	**7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.**	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	**8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.**	8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.	
9. Only a minor improvement, e.g., trail.	9. Several minor improvements.	**9. Major improvements, e.g., power line, dam, road or structures.**	
C. Opportunities for Primitive Recreation			
Opportunity for solitude			**M**
10. Feeling of being alone or remote from civilization.	**10. Feeling of being alone is possible but signs of civilization are likely.**	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	**11. Recreation use by other parties is moderate.**	11. Recreation use by other parties is high.	
Primitive Type Recreation Activities			
Hiking/backpacking opportunities			

Mt. Rose Wilderness & Roadless Additions (0519-005)			
High	Moderate	Low	Rating
12. Multiple system trails into area.	12. At least one system trail into area.	**12. No system trails that are maintained.**	
13. Several dispersed camping sites that are routinely used.	13. At least one dispersed camping site that is occasionally used.	**13. No dispersed camping sites that are used, but progressive camping may occur.**	
Fishing opportunities			
14. Good populations of native game fish.	14. Fair populations of native game fish.	**14. Low populations of native game fish.**	
Cross country Skiing and snowshoeing opportunities			
15. Terrain is gentle and vegetation open to allow easy cross country travel.	15. Terrain is gentle and vegetation open to allow easy cross country travel.	15. Terrain is gentle and vegetation open to allow easy cross country travel.	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	16. Terrain is moderate or vegetation brushy that impedes cross country travel.	**16. Terrain is gentle and vegetation open to allow easy cross country travel.**	
17. Snowmobile use prohibited, or if allowed, rarely used.	17. Snowmobile use restricted to two months or less, or on half or less of the area.	**17. Snowmobile use permitted.**	
D. Special Features and Values			
Scenic features			**L**
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.	**18. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.**	
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	**19. Area has no permanent lakes but may have perennial creeks or ponds.**	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	**20. No major or very few minor other special features.**	
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.	**21. Does not contain an established, candidate, or eligible special area.**	
Scientific, educational, or historical values			
22. Several significant scientific, educational, or historical values have been identified in the area.	22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.	**22. No scientific, educational, or historical value has been identified in the area.**	

Mt. Rose Wilderness & Roadless Additions (0519-005)			
High	Moderate	Low	Rating
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**L**
24. Size and shape of area allows effective management.	24. Size or shape will affect manageability but can be mitigated by boundary changes.	**24. Size is small or has irregular shape that makes management difficult.**	
25. Minimum activity in surrounding area that affects manageability.	25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.	**25. Activity in surrounding area will affect the manageability of the inventoried area.**	
26. Located adjacent to existing wilderness or other inventoried areas.	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	26. Isolated, small parcel of land.	
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	27. More than half the boundary follows a feature that can be easily found and identified on the ground.	**27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.**	
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	**29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.**	29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.	
30. Boundary totally on national forest and not adjacent to private property.	30. Boundary follows property line forming irregular shape.	30. Boundary crosses private property so there are inholdings along the boundary.	
31. No inholdings.	31. Few small inholdings may be present.	31. Several small or one large inholding.	

Mt. Rose Wilderness & Roadless Additions (0519-005)			
High	Moderate	Low	Rating
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	32. Human improvement places user on notice of prohibited use, e.g., a sign.	**32. Human improvement not a deterrent may provide point of access of prohibited use.**	

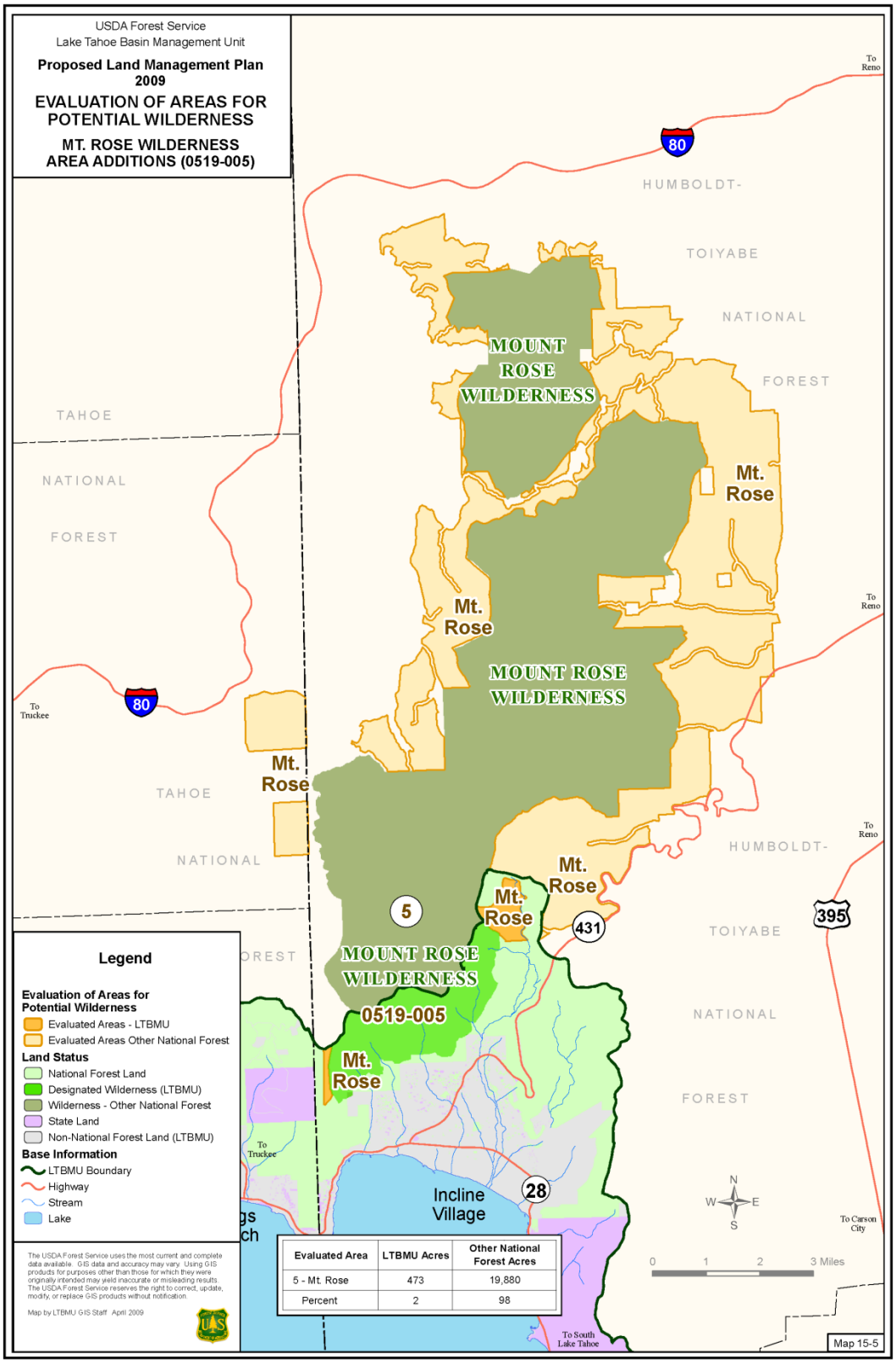


Figure C 6. Mt. Rose Wilderness and Roadless Additions Area Map (0519-005)

Table C 7. Wilderness Capability Ratings (The Granite Chief Wilderness and Roadless)

The Granite Chief Wilderness & Roadless Additions (0519-006)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**M**
1. Diverse community of native mammals, birds, and fish.	**1. Moderate variety of native mammals, birds, and fish.**	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	2. Known moderate variety of threatened and endangered species.	**2. Low variety of threatened and endangered species.**	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	3. Streams are important to historic distribution of Lahontan cutthroat trout.	3. Streams are not important to historic distribution of Lahontan cutthroat trout.	
4. Provides critical linkage between wildlife areas or habitats.	**4. Provides linkage between wildlife areas or habitats.**	4. Does not provide linkage between wildlife areas or habitats.	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**M**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	**7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.**	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	**8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.**	8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.	
9. Only a minor improvement, e.g., trail.	**9. Several minor improvements.**	9. Major improvements, e.g., power line, dam, road or structures.	
C. Opportunities for Primitive Recreation			
Opportunity for solitude			**M**
10. Feeling of being alone or remote from civilization.	**10. Feeling of being alone is possible but signs of civilization are likely.**	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	**11. Recreation use by other parties is moderate.**	11. Recreation use by other parties is high.	
Primitive Type Recreation Activities			
Hiking/backpacking opportunities			

The Granite Chief Wilderness & Roadless Additions (0519-006)			
High	Moderate	Low	Rating
12. Multiple system trails into area.	12. At least one system trail into area.	12. No system trails that are maintained.	
13. Several dispersed camping sites that are routinely used.	**13. At least one dispersed camping site that is occasionally used.**	13. No dispersed camping sites that are used, but progressive camping may occur.	
Fishing opportunities			
14. Good populations of native game fish.	14. Fair populations of native game fish.	**14. Low populations of native game fish.**	
Cross country Skiing and snowshoeing opportunities			
15. Easily accessible in winter by motorized wheeled vehicles.	15. Snow keeps wheeled vehicles several miles from area, but access is possible by snowmobile.	**15. Area is difficult or rarely accessed by snowmobile.**	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	16. Terrain is moderate or vegetation brushy that impedes cross country travel.	16. Terrain is gentle and vegetation open to allow easy cross country travel.	
17. Snowmobile use prohibited, or if allowed, rarely used.	17. Snowmobile use restricted to two months or less, or on half or less of the area.	17. Snowmobile use permitted.	
D. Special Features and Values			
Scenic features			**L**
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.	**18. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.**	
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	**19. Area has no permanent lakes but may have perennial creeks or ponds.**	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	**20. No major or very few minor other special features.**	
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.	**21. Does not contain an established, candidate, or eligible special area.**	
Scientific, educational, or historical values			

The Granite Chief Wilderness & Roadless Additions (0519-006)			
High	Moderate	Low	Rating
22. Several significant scientific, educational, or historical values have been identified in the area.	22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.	**22. No scientific, educational, or historical value has been identified in the area.**	
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**L**
24. Size and shape of area allows effective management.	24. Size or shape will affect manageability but can be mitigated by boundary changes.	**24. Size is small or has irregular shape that makes management difficult.**	
25. Minimum activity in surrounding area that affects manageability.	**25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.**	25. Activity in surrounding area will affect the manageability of the inventoried area.	
26. Located adjacent to existing wilderness or other inventoried areas.	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	26. Isolated, small parcel of land.	
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	27. More than half the boundary follows a feature that can be easily found and identified on the ground.	**27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.**	
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.	29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.	
30. Boundary totally on national forest and not adjacent to private property.	30. Boundary follows property line forming irregular shape.	**30. Boundary crosses private property so there are inholdings along the boundary.**	
31. No inholdings.	31. Few small inholdings may be present.	**31. Several small or one large inholding.**	

The Granite Chief Wilderness & Roadless Additions (0519-006)			
High	Moderate	Low	Rating
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	32. Human improvement places user on notice of prohibited use, e.g., a sign.	**32. Human improvement not a deterrent may provide point of access of prohibited use.**	

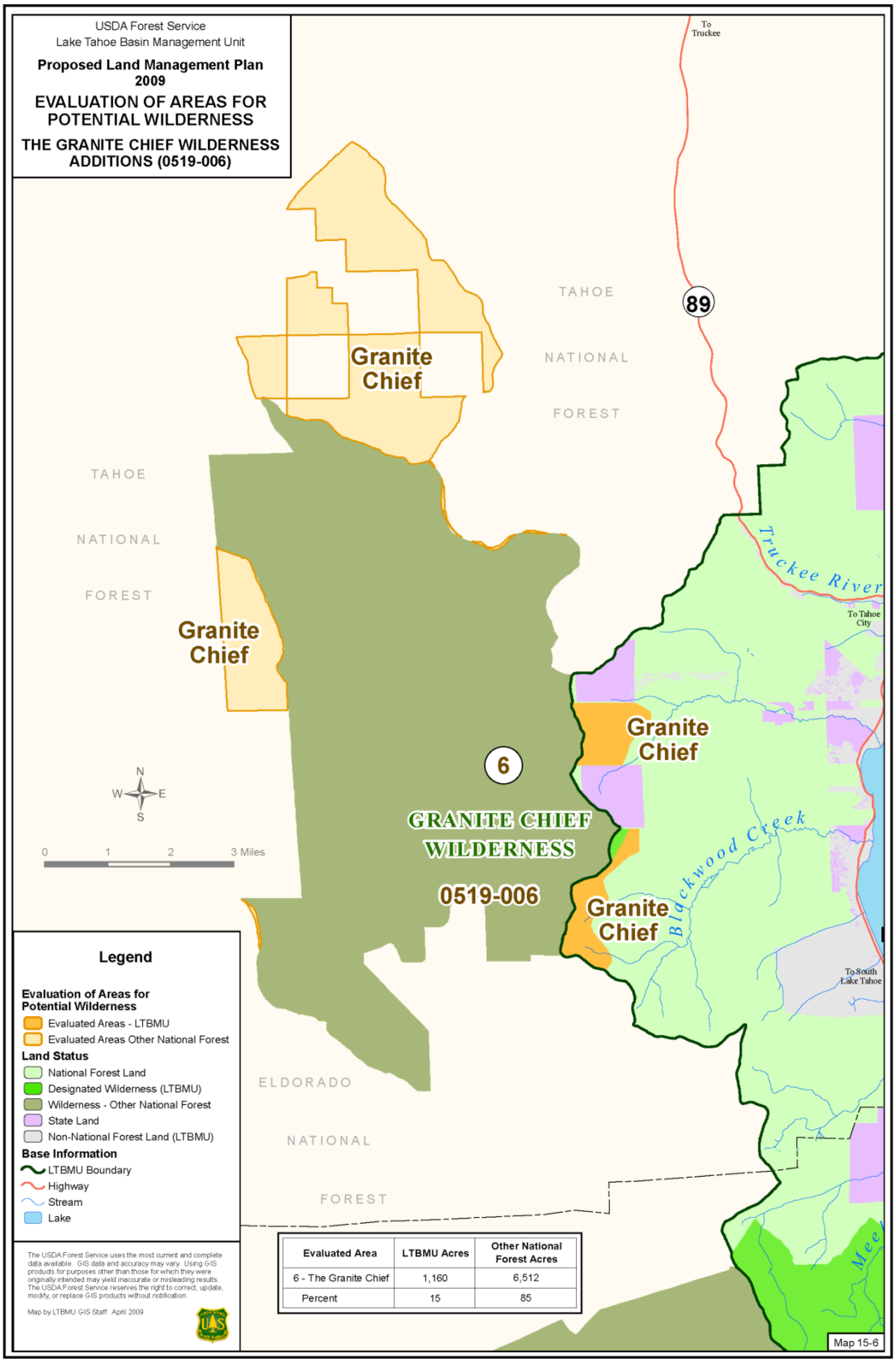


Figure C 7. Granite Chief Wilderness Additions Map (0519-006)

Availability

Availability of the potential wilderness area is determined by describing *other* resource potentials and resource needs beyond the wilderness characterization addressed in the Capability process. Pertinent quantitative and qualitative information including current use, outputs, trends, and potential future use and/or outputs for the applicable resources in accordance with Forest Service Handbook 1909.12 Chapter 70, Section 72.2. Each area has been analyzed for the following criteria, as applicable:

Table C 8. Area Availability Resource Criteria

Resources
1. Areas that are of high value for *communication sites* where installation and maintenance of improvements may be required
2. Areas with existing motorized or *mechanized access or use*. (winter summer).
3. Areas needing *active vegetative restoration* activity due to specific species survival, or identifiable fuels reduction activity to reduce the risk of wildfire, or known areas of severe insect infestation(s) that will lead to high tree mortality
4. Areas of high value *mineral deposits* of economic or strategic importance
5. Areas having such *unique characteristics or natural phenomena* that public access should be developed to facilitate public use and enjoyment including winter sports sites
6. *Lands* committed through contracts, permits, or agreements that would be in conflict with wilderness management (some minor permitted uses may still be allowed)
Ratings
High = areas having evidence of and high priority need the category addressed.
Moderate = areas having a need in the category addressed.
Low = areas having no to little need or management addressed.

Table C 9. Details of the Availability Assessment for Areas Being Evaluated for Potential Wilderness on the Lake Tahoe Basin Management Unit

Criteria	Desolation Wilderness Additions Pyramid 0519-001	Dardanelles Roadless 0519-002	Freel/ Jobs Peek Roadless 0519-003	Lincoln Creek Roadless 0519-004	Mt. Rose Wild & Additions 0519-005	Granite Chief Wilderness Additions 0519-006
1. Areas that are of high value for communication sites where installation and maintenance of improvements may be required	L	L	L	L	L	L
2. Areas with existing motorized or mechanized access or use. (winter summer).	L	L	H	M	H	L
3. Areas needing active vegetative restoration activity due to specific species survival, or identifiable fuels reduction activity to reduce the risk of wildfire, or known areas of severe insect infestation(s) that will lead to high tree mortality	M	M	M	M	M	M
4. Areas of high value mineral deposits of economic or strategic importance	L	L	L	L	L	L
5. Areas having such unique characteristics or natural phenomena that public access should be developed to facilitate public use and enjoyment including winter sports sites	L	L	L	L	L	L
6. Lands committed through contracts, permits, or agreements that would be in conflict with wilderness management (some minor permitted uses may still be allowed)	L	L	L	L	L	L

Need for Wilderness

Determination if the area is needed as part of the National Wilderness Preservation System is the final step of the evaluation process. As outlined in Forest Service Handbook 1909.12 chapter 70, section 72(e), this section summarizes the factors considered and the process used in assessing the need for each potential wilderness area.

Desolation Wilderness Additions – Pyramid Roadless Area (0519-001)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

The Pyramid area lies along the eastern boundary and is contiguous to the Desolation Wilderness. Its boundary would interface with urbanized and semi-natural settings. Because of the proximity to urban areas, there are numerous informal trails in the Pyramid area, and several segments of system trails. Much of the Pyramid area is comprised of steep terrain, and forms a physical buffer to the Desolation Wilderness.

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

Adjacent wilderness areas are all heavily used, owing to their relatively easy accessibility and proximity to urban centers in California and Nevada. Expected increases in population levels are expected to generate more pressure on existing wildernesses. The Pyramid area would accommodate some of that demand but the steep terrain would limit actual use.

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Within the Lake Tahoe Basin, are several sizeable roadless areas (e.g. Freel, Dardanelles), that provide opportunities for many forms of outdoor recreation, such as hiking, horseback riding, mountain biking, along with winter recreation opportunities such as cross-country skiing and snowshoeing. The Pyramid area is largely a semi-primitive area, but its relative steep terrain constrains most recreation opportunities.

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Pyramid area provides some natural habitat for a variety of native wildlife and plants species. Throughout the Lake Tahoe Basin there are limited natural areas undisturbed by the extensive logging activities that took place in the late 1800's. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin.

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Desolation Wilderness has been thoroughly evaluated as to its potential for increasing capacity from either a social or biological perspective and its current management conditions are being actively monitored. Sanctioned human use levels are unlikely to change. The Pyramid area

complements the wilderness character and experience visitors receive in the Desolation, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs.

Pyramid is predominately in a semi-primitive natural condition (ROS), and the area appears to have a stable ecosystem. However, its relatively narrow shape and length suggest that it does not have its own unique and distinctive ecosystem.

Dardanelles Roadless Area (0519-002)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

Located in the southernmost section of the Lake Tahoe Basin, the Dardanelles (Meiss) area has long served as an alternative destination for the heavily used Desolation Wilderness. It is also an alternative to the popular Mokelumne Wilderness to the south. The area is easily accessible from several trailheads off both Highway 89 and 88. While the Desolation offers visitors granite canyons, the Dardanelles area offers a large diversity of landscapes, from mountain meadows, scenic lakes to towering alpine peaks.

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

Adjacent wilderness areas are all heavily used, owing to their relatively easy accessibility and proximity to urban centers in California and Nevada. Expected increases in population levels are expected to generate more pressure on existing wildernesses.

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Within the Lake Tahoe Basin, are several sizeable roadless areas (e.g. Freel, Lincoln), that provide opportunities for many forms of outdoor recreation, such as hiking, horseback riding, mountain biking, along with winter recreation opportunities such as cross-country skiing and snowshoeing. The Dardanelles area has long-provided a wide variety of non-motorized recreational opportunities for visitors.

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Dardanelles area provides a diversity of natural habitat for a variety of native fish, wildlife and plants species. Throughout the Lake Tahoe Basin there are limited natural areas undisturbed by the extensive logging and grazing activities that took place in the late 1800's. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin.

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Desolation Wilderness has been thoroughly evaluated as to its potential for increasing capacity from either a social or biological perspective and its current management conditions are being actively monitored. Sanctioned human use levels are unlikely to change. The Dardanelles area complements the wilderness character and experience visitors receive in the Desolation, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6.. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs.

Dardanelles is predominately in a semi-primitive natural condition (ROS), and despite past human influences from grazing and logging, and the establishment of several small dams for fisheries, the area has a stable ecosystem.

Freel Roadless Area (0519-003)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

The Freel area lies along the southern slopes of the Lake Tahoe Basin, across the lake from Desolation Wilderness, and with an hours drive of Mt. Rose Wilderness and Mokelumne Wilderness. The Freel area is adjacent to a number of roads and trails on its northern and southern boundary and urbanized areas along the western and southern boundary. While much of the Freel area is comprised of steep terrain, many areas are easily accessible from the urban fringe.

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

Adjacent wilderness areas are all heavily used, owing to their relatively easy accessibility and proximity to urban centers in California and Nevada. Expected increases in population levels are expected to generate more pressure on existing wildernesses. The Freel area could accommodate some of that demand as it is predominately undeveloped forest land with some scenic peaks and water sources.

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Within the Lake Tahoe Basin, are several sizeable roadless areas (e.g. Lincoln, Dardanelles), that provide opportunities for many forms of outdoor recreation, such as hiking, horseback riding, mountain biking, along with winter recreation opportunities such as cross-country skiing and snowshoeing. The Freel area is largely a semi-primitive area, with steep terrain and can accommodate most recreation opportunities. Portions are popular with snowmobiles and mountain bikers.

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Freel area provides some natural habitat for a variety of native wildlife and plants species. Throughout the Lake Tahoe Basin there are limited natural areas undisturbed by the extensive logging activities that took place in the late 1800's. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin.

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Desolation Wilderness has been thoroughly evaluated as to its potential for increasing capacity from either a social or biological perspective and its current management conditions are being actively monitored. Sanctioned human use levels are unlikely to change. The Freel area complements the wilderness character and experience visitors receive in the Desolation, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs.

Freel is predominately in a semi-primitive natural condition (ROS), and the area appears to have a high degree of natural integrity and an apparent stable ecosystem.

Lincoln Creek Roadless Area (0519-004)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

The Lincoln Creek area lies along the eastern slopes of the Lake Tahoe Basin, across the lake from Desolation Wilderness, and south of Mt. Rose Wilderness. The Lincoln Creek area, is adjacent to a number of roads and trails on its eastern boundary and urbanized areas along the western and southern boundary. While much of the Lincoln Creek area is comprised of steep terrain, many areas are easily accessible from the urban fringe

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

Adjacent wilderness areas are all heavily used, owing to their relatively easy accessibility and proximity to urban centers in California and Nevada. Expected increases in population levels are expected to generate more pressure on existing wildernesses. The Lincoln Creek area would accommodate some of that demand but the steep terrain, limited unique scenic character and lack of water sources would limit actual use.

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Within the Lake Tahoe Basin, are several sizeable roadless areas (e.g. Freel, Dardanelles), that provide opportunities for many forms of outdoor recreation, such as hiking, horseback riding, mountain biking, along with winter recreation opportunities such as cross-country skiing and snowshoeing. The Lincoln Creek area is largely a semi-primitive area, but its relative steep terrain and constrains most recreation opportunities.

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Lincoln Creek area provides some natural habitat for a variety of native wildlife and plants species. Throughout the Lake Tahoe Basin there are limited natural areas undisturbed by the extensive logging activities that took place in the late 1800's. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin.

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Desolation Wilderness has been thoroughly evaluated as to its potential for increasing capacity from either a social or biological perspective, and its current management conditions are being actively monitored. Sanctioned human use levels are unlikely to change. The Lincoln Creek area complements the wilderness character and experience visitors receive in the Desolation, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs.

Lincoln Creek is predominately in a semi-primitive natural condition (ROS), and the area appears to have a stable ecosystem. However, its relatively narrow shape and length suggest that it does not have its own unique and distinctive ecosystem.

Mt. Rose Wilderness Additions (0519-007)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

Located in the northeast section of the Lake Tahoe Basin, the Mt. Rose area is contiguous to the Mt. Rose Wilderness, on both the eastern and western boundary. The area is easily accessible from the Tahoe Meadows trailhead Highway 431. The area is also within several short hours drive of Reno and Carson City. During the winter months this area is extremely popular with cross-country skiers and the eastern parcel is also very popular with snowmobiles.

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

The Mt. Rose Wilderness receives strong demand for access to such destinations as the summit of Mt. Rose itself, and in several internal areas along with demand for access of the Tahoe Rim

Trail, along its southern boundary. It does not have a permit system in place and is in general managed under the broad guidelines of the National Wilderness Preservation Act. Trends in population suggest a growing demand from adjacent populations centers (Reno, Carson and Tahoe). Additional pressure on trail uses are also predicted in and around the Mt. Rose area as new development from the Rim Trail and the neighboring Humboldt-Toiyabe NF create additional trail opportunities that will only increase over time._

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Much of the non-wilderness land area to the south provides recreational opportunities through the Tahoe Rim Trail system which extends around the Basin. Odd-Even mountain-biking opportunities are available on the Rim Trail segment from Hwy 431 to Tunnel Creek. Non-limited equestrian opportunities are also available. During the winter months, both sides of the Tahoe Meadows area (including the Mt. Rose Study area) are widely used by winter recreationists. The study area is very popular with snowmobilers (area south of Hwy 431 is closed to this activity).

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Mt. Rose study area provides a limited diversity of natural habitat because of its steep topography and terrain for a variety of native fish, wildlife and plants species. The area was extensively logged in the later 1800's. Later grazing activities took place in the early 1900's that have modified the original landscape. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin.

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Mt. Rose Wilderness, through the Limits of Acceptable Change (LAC) process, has been evaluated as to its potential for increasing capacity from either a social or biological perspective and its current management conditions are being actively monitored. Sanctioned human use levels are unlikely to change. By providing additional buffer, the Mt. Rose study area does complement the wilderness character and experience visitors receive in the Mt. Rose Wilderness, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs. The Mt. Rose is predominately in a semi-primitive non-motorized ROS setting. Its relatively small size is insufficient to stand alone as a designated wilderness and so would need to be added to the existing Mt. Rose Wilderness. Also, its small acreage also suggest the area does not have its own unique and distinctive ecosystem.

The Granite Chief Wilderness Additions (0519-010)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

The Granite Chief Roadless Area lies along the western boundary of the Lake Tahoe Basin, adjacent to the Granite Chief Wilderness, and within an hours journey to the Desolation Wilderness and within two hours drive of the Mt. Rose Wilderness area. Through portions of the Granite Chief run sections of the Pacific Crest/Tahoe Rim Trail. It has a high degree of natural integrity and apparent naturalness. Its small acreage and inholdings makes the land area dependent upon the adjacent Granite Chief Wilderness to provide a full wilderness character.

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

Adjacent wilderness areas are all heavily used, owing to their relatively easy accessibility and proximity to urban centers in California and Nevada. Expected increases in population levels are expected to generate more pressure on existing wildernesses. The Granite Chief area could accommodate some of that demand as it is predominately undeveloped forest land adjacent to some scenic peaks.

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Within the Lake Tahoe Basin, are several sizeable roadless areas (e.g. Lincoln, Dardanelles), that provide opportunities for many forms of outdoor recreation, such as hiking, horseback riding, mountain biking, along with winter recreation opportunities such as cross-country skiing and snowshoeing. The Granite Chief area is largely a semi-primitive area, with predominately steep terrain; however, it can accommodate some recreation opportunities.

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Granite Chief area provides some natural habitat for a variety of native wildlife and plants species. Throughout the Lake Tahoe Basin, there are limited natural areas undisturbed by the extensive logging activities that took place in the late 1800s. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Granite Chief Wilderness has been evaluated as to its potential for increasing capacity from either a social or biological perspective, and its current management conditions are being actively monitored according to the guidance of the 1964 Wilderness Act. Sanctioned human use levels are likely to change. The Granite Chief Roadless Area complements the wilderness character and experience visitors receive in the Granite Chief Wilderness, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types

and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs.

Granite Chief is predominately in a semi-primitive natural condition (ROS), and the area appears to have a high degree of natural integrity, however its small size, unless added to the adjacent Granite Chief Wilderness area, precludes any ability to provide for preservation of identifiable landform types and ecosystems.

Agency Recommendation

The agency recommendation varies by Alternative.

Effect of Recommendations

The following is a discussion of the impact on the area if it were designated as wilderness and the impact on the area if it were managed as non-wilderness.

Desolation Wilderness Additions - Pyramid Roadless Area

If wilderness:

Effects on wilderness characteristics and values: Pyramid Roadless Area would need to be designated as "wilderness," adjacent to the existing Desolation Wilderness. The area could not be managed as wilderness without this linkage. It is not anticipated the Pyramid area would significantly receive more use because of a wilderness designation because of the steep terrain. Most of the eastern boundary of the Pyramid Roadless Area interfaces with urban development that would facilitate intrusions into the area that would make "manageability" challenging. The greatest impact would be on the Desolation Wilderness as it presently exists, by creating a "buffer," of undeveloped land. Wilderness designation of the Pyramid area would ensure its long-term integrity as a relatively naturally appearing area providing benefits for protection of wildlife habitat.

Effects on non-wilderness resources and uses: Some conflicts would become significant generated by a predicted conflict with adjacent urban developments and activities because of the proximity of the Pyramid area to multiple developments such as subdivisions, summer-home residences, established highways and trails. That proximity would likely generate management conflicts such as intrusions by mechanized or motorized recreationists, noise and congestion from such areas as Echo, Angora, Fallen Leaf and Cascade Lakes.

Economic and social effects: Addition of the Pyramid Roadless Area into the National Wilderness Preservation System would generate limited economic effects as the land area would remain largely unmodified and visitation would remain stable as most of the Pyramid area has been accessible and open. Because of its proximity to the long-established Desolation Wilderness (which has been a designated primitive area since 1931, and wilderness since 1969), the Pyramid area is generally viewed as a natural scenic boundary to the Desolation and that remains its strongest value.

If non-wilderness:

Effects on wilderness characteristics and values: Little of the Pyramid Roadless Area is expected to change if it is not added to the Desolation Wilderness. The status of the Pyramid Roadless Area as such is the critical determinant for that stability in the areas natural characteristics and future value. Its steep terrain has provided an "unofficial" buffer on the eastern boundary of the Desolation.

Mitigation, if any. No special mitigation is necessary.

Effects on non-wilderness resources and uses: Should the Pyramid Roadless Area remain in its current status, existing resources and uses would stay in their present condition unless the

Roadless designation was modified to allow greater development or a change in resource or vegetation treatment prescriptions.

Economic and social effects: Similar to the alternative option of wilderness, should the Pyramid area remain in its present management status, there are no anticipated noteworthy changes in either the economic or social outputs of conditions.

Dardanelles Roadless Area

If wilderness:

Effects on wilderness characteristics and values: The Dardanelles Roadless Area is a substantially natural area offering a diversity of landscapes, and scenic opportunities. The Dardanelles has been used as an alternative destination to the Desolation Wilderness because of its easy accessibility and semi-primitive natural condition. Its boundary offers a relatively well defined and manageable land area should it become wilderness. The area offers opportunities for solitude and is relatively free of human developments or modifications with the exception of a historic cabin and barn located in the southern portion of the area. Rock dams were installed 50-years ago for fisheries management at several of the major lakes within Dardanelles. If designated as a wilderness, the Dardanelles area would retain wilderness attributes for wildlife habitat but would require a vegetation management prescription appropriate to a wilderness area; though to date there have not been any treatments. For well over a century, grazing was permitted in the Dardanelles area, but this activity was eliminated several years ago (note that grazing is allowed in wilderness areas).

Effects on non-wilderness resources and uses: There are no motorized uses within the Dardanelles area. In recent years, there have been an increasing number of mountain bikers accessing the Dardanelles Roadless Area; however this activity has been restricted to portions of the existing trail system, and prohibited on the Pacific Crest Trail segment that traverses the southern and western portions of the Dardanelles. Should this area become designated as a wilderness, this mechanized activity would need to be variously modified and regulated to preserve the overall wilderness character of the Dardanelles, and allow users an outstanding opportunity for solitude or primitive and unconfined recreation. Alternatives would include eliminating that mechanized use as per the guidance of the National Wilderness Preservation Act, or the boundary of the Dardanelles modified to accommodate that activity outside of designated wilderness.

Designation could lead to adverse effects to the Meiss Cabin and Barn and historic dams at Showers, Dardanelles, and Round lakes if the designation did not include enabling legislation to allow for preservation of these structures.

Economic and social effects: The Dardanelles is already well established as a “wilderness-like” natural area within the Tahoe Basin, and provides a diversity of semi-primitive recreation opportunities. Its multiple lakes and meadows offer scenic opportunities as well as opportunities for wildflower viewing and non-motorized winter recreation and horseback riding. Accordingly, the marginal increase in the economic contribution if the area was to be designated as a wilderness would be modest (estimated currently to be in excess of $100,000), annually largely generated through camping equipment rentals and purchases, and also, there is a single outfitter guide permit at this time, authorized during the winter months to utilize the cabin).

If non-wilderness:

Effects on wilderness characteristics and values: If maintained as a roadless area, the Dardanelles would likely retain its natural character and integrity. Vegetative prescriptions however may alter the present natural appearance of portions of the area. The area would maintain its overall character and capability to support a diverse community of native plants and wildlife.

Mitigation, if any. None required.

Effects on non-wilderness resources and uses: Mechanized recreational activities would continue, and the Dardanelles area would continue to experience a potential increase in visitation as an alternative to the quota-limited Desolation Wilderness. That unregulated use would eventually generate user impacts around popular lakes and destination within the Dardanelles that would require management attention. Permitted use of the "Meiss" cabin & barn would continue under special use authorization and potentially expand to include summer outfitter guiding activities.

Economic and social effects: If the Dardanelles area is not converted to formal wilderness status, but its status remains unchanged, it will continue to experience growing visitation as an alternative to other roadless areas within the area, as it is meeting the public's demand for a "wilderness-like" setting that accommodates most popular semi-primitive activities as hiking, backpacking, camping, fishing, skiing and saddle stock opportunities. Because a non-wilderness designation for the Dardanelles area does not substantially alter the present economic values respective to the current values respective to the status of the Dardanelles area, the projected economic contribution would be similar to its wilderness status outputs.

Freel/Jobs Peak Roadless Area

If wilderness:

Effects on wilderness characteristics and values: This prescription for the Freel Roadless Area would support the distinctive natural attributes of this moderately to severely steep land area (80% of the Freel area has slopes in excess of 30%). Along with other south shore area roadless areas, the Freel area has provided an alternative destination to the Desolation Wilderness, with relatively easy accessibility and wilderness character. The higher elevations of the Freel area offer panoramic views of the Tahoe Basin and across the lake and of the Desolation Wilderness, and shaded urban views. Along some portions of the Freel area are some moderate improvements such as roads, powerlines and structures. Some vegetation management prescriptions would be affected. Maintaining the area as "roadless," would also ensure its long-term integrity as a relatively natural appearing land area. A cushion plant community at the top of Freel Peak would be protected.

Effects on non-wilderness resources and uses: Approximately half of the Freel Roadless Area is presently accessible by snowmobiles and contains designated OHV routes and system roads and trails. These routes are also popular with mountain bikers, especially sections around Tucker Flat (known as "Mr. Toad's Wild Ride.") and a Tahoe Rim Trail segment above Star Lake. These popular activities would be prohibited or would need to be otherwise regulated. Other effects besides vegetation management prescription changes, may involve flight patterns for aircraft approaching the South Tahoe Airport, and maintenance of power lines.

Designation could lead to adverse effects to the historic dam at Star Lake if the designation did not include enabling legislation to allow for preservation of this structure.

Economic and social effects: Projections done in the 1988 Forest Plan indicated that a wilderness designation for the Freel area would generate up to 3 person years of annual employment and that would generate $36,000 of annual income. Any income stimulated by a wilderness designation of the area would come from such actions as backcountry equipment sales and rentals, related supplies and clothing, along with map sales, and potentially income from outfitter-guiding permitting. Adjusted for inflation and the presence of outfitter-guides, that estimated annual income is estimated to be around $100,000 annually. Most anticipated social effects will be positive with the significant exception of those nonconforming recreational uses such as mountain biking and snowmobiling, as designation of the Freel area as a formal wilderness would create substantial obstacles to the continuation of those uses which have been established in large portions of the Freel area for several decades. Accordingly, from an economic perspective of wilderness designation, there would be a loss of income if there was an elimination of access and recreational uses from mountain bikers and snowmobilers (equipment rental, maintenance, operations) of $50,000 or more annually (note at present, there are no outfitter-guide permitted operations in the Freel area).

If non-wilderness:

Effects on wilderness characteristics and values: The Freel Roadless Area would continue to provide a substantially natural setting that largely provides wilderness-like characteristics and opportunities for solitude and primitive recreation. Designated areas within the Freel would accommodate the demand for mechanized and motorized recreation.

Mitigation, if any: None

Effects on non-wilderness resources and uses: Non-wilderness designation would essentially allow the present mixed uses to continue, while allowing management of the area to continue to provide a diverse habitat for wildlife, and also opportunities for primitive recreation along with opportunities for solitude.

Economic and social effects: To maintain the Freel Roadless Area in its present non-wilderness status would accommodate a significant mixture of mechanized and motorized access opportunities along with allowing the Freel area to maintain most of its wilderness attributes and values. The natural integrity and solitude of the area would be maintained, and the effect on the economy would be relatively inconsequential. That combination of effects reflects Freel is a scenic and habitat resource that also is valued by the community for its accessibility along with its natural and scenic character. Economically, the approximate value for non-wilderness use would be similar to wilderness use.

Lincoln Creek Roadless Area

If wilderness:

Effects on wilderness characteristics and values: The Lincoln Creek Roadless Area is a relatively steep (over 80% of the lands have slopes greater than 30%), moderately natural area that still provides important habitat to wildlife. With a complex boundary that interfaces with urban areas on the western and southern portions, there is moderate opportunity for solitude or primitive recreation opportunities. With few trails and limited water sources, the Lincoln Creek area is not easily accessible internally nor has any unique destinations. It greatest value is as a substantially naturally appearing forested area overlooking the east shore of the Lake Tahoe Basin.

Effects on non-wilderness resources and uses: Areas of Lincoln Creek are located adjacent to urban zones, and wilderness designation would have substantial impacts on the present recreational uses (primarily mountain biking and snowmobile uses).

Economic and social effects: Because the Lincoln Roadless Area has not attracted significant recreational use respective to its potential as a wilderness, there are mixed effects probable if it was designated. Since opportunities for solitude are moderate and the Lincoln Creek area has relatively low unique or scenic features, the social values would be moderate. Respective to the Forest LMP, the projected economic benefits of Lincoln Creek as a wilderness would also be relatively low (estimated at $17,000 in 1988, projected to $75,000 in 2009 if outfitter guiding services are permitted in this area).

If non-wilderness:

Effects on wilderness characteristics and values: If the Lincoln Creek Roadless Area is maintained as such, the area should retain its attributes of natural integrity, solitude and primitive recreation opportunities.

Mitigation, if any: None

Effects on non-wilderness resources and uses: The Lincoln Creek area would continue to accommodate nonconforming wilderness recreational activities such as mountain biking and snowmobiling uses, and the extensive urban interface areas would remain accessible for users. The area would accommodate vegetative management prescriptions.

Economic and social effects: Maintaining the present natural condition would allow continued opportunities for solitude and maintain available scenic attributes. Non-wilderness economic effects would derive from the continuation of activities such as snowmobiling and mountain biking. There is some associated use by the permitted Zephyr Cove Resort Snowmobiling operations on small portions of the Lincoln Creek Roadless Area.

Mt. Rose Wilderness Additions

If wilderness:

Effects on wilderness characteristics and values: The proposed additions to the present Mt. Rose Wilderness would further increase the contiguous area of protected land and would greater buffer the core wilderness area. Larger areas of land not only provide for greater opportunities for solitude but allow for a primitive experience away from roads and development. Ecosystem attributes are also further protected and buffered against human development and intrusion. The Mt. Rose additions would bolster wilderness character and add greater value to this wilderness unit as a whole.

Effects on non-wilderness resource and users: In particular, the Relay Addition, (northeasterly addition) would directly conflict with winter motorized use. Currently the area identified for potential wilderness designation is heavily used during the winter as a snowmobile playground. Wilderness designation would eliminate this user group, who mostly travel from the metropolitan areas of Reno and Sparks to recreate off Highway 431. During the summer months, mechanized use is generally restricted to the road that access's the Relay Communication station and doesn't travel through the Relay addition.

Economic and social effects: Wilderness designation would benefit those seeking solitude and a primitive experience. Eliminating snowmobiles would expand more area for non-motorized use during the winter. Conversely wilderness designation for the Relay addition would create a cherry-stem of non designated land between the proposed addition and another "non-motorized" segment on the Humboldt-Toiyabe National Forest that lies further to the east further complicating an already difficult and contentious area to manage.

If non-wilderness:

Effects on wilderness characteristics and values: Without wilderness designation this proposed addition will continue to see intense winter motorized use. Therefore many aspects of wilderness character such as solitude and non-motorized recreation will not be available. There is little value for wilderness recreation under current conditions. The land still does provide for an overall natural setting, although small in scope.

Mitigation, if any: None

Effects on non-wilderness resources and uses: The Mt. Rose addition would continue to provide a natural setting that allows for mixed use. Ever increasing motorized use could potentially lead to point source pollution of Incline Lake and the water resources of Lake Tahoe.

Economic and social effects: Maintaining non-wilderness status of this segment will continue to support local businesses that sell and service snow machines. It will also continue to provide for the whole spectrum of recreation opportunity classes. Economically, the approximate value for non-wilderness use would be similar to wilderness use.

Granite Chief Wilderness Additions

If wilderness:

Effects on wilderness characteristics and value: The proposed additions to the present Granite Chief wilderness would further increase the contiguous area of protected land and would provide more buffer to the core wilderness area. While its small size constrains its potential as a "stand-alone" wilderness, formal wilderness designation would permanently ensure protection of an area where the Pacific Crest Trail traverses and would allow for the wilderness attributes that the PCT tries to achieve. Inclusion into the NWPS would protect the headwaters of Blackwood Creek, increase the size of the present wilderness, buffer the core Granite Chief Wilderness and further provide true wilderness designation for another segment of the PCT. These all together increase the value and overall goals sought for wilderness designation.

Effects on non-wilderness resources and uses: Currently these two additions allow winter motorized use by snowmobiles. Although the terrain and vegetation is not conducive to snowmobiles, wilderness designation would eliminate this use. There are also several 4WD roads and trails nearby that facilitate motorized and mechanical use (mountain bikes) which could cause management difficulties if the areas were wilderness. Vegetative prescriptions would also be eliminated if the land were wilderness.

Economic and social effects: Most anticipated effects would be positive, but not drastically different than present conditions present. The largest effect socially would be to eliminate snowmobile use from where it's already allowed.

If non-wilderness:

Effects on wilderness characteristics and value: Any potential roadless area that remains undesignated is potentially subject to non-conforming wilderness uses. Vegetative prescriptions and further user-created motorized trail development are the main concerns. Also degradation of undisturbed wildlife habitat by snowmobile intrusion and increasingly motorized recreational uses could reduce wilderness character and value.

Mitigation, if any: None

Effects on non-wilderness resources and uses: Use would remain the same, unchanged under a non-wilderness status. Mixed use would be allowed to continue.

Economic and social effects: To maintain the Granite Chief additions in non-wilderness status would accommodate the mixed use regime that is established today. Economic effects pertaining to this area would remain the same.

Table C 10. Summary of Assessments (by Area)

Area Name	Capability [1]	Availability [2]	Need [3]
Desolation Wilderness additions - Pyramid 0519-001	0 High	0 High	L
	2 Moderate	1 Moderate	
	3 Low	5 Low	
Dardanelles Roadless 0519-002	4 High	0 High	H
	1 Moderate	1 Moderate	
	0 Low	5 Low	
Freel/ Jobs Peek Roadless 0519-003	0 High	1 High	M
	5 Moderate	1 Moderate	
	0 Low	4 Low	
Lincoln Creek Roadless 0519-004	0 High	0 High	L
	3 Moderate	2 Moderate	
	2 Low	4 Low	
Mt. Rose Wilderness Additions 0519-005	0 High	1 High	L
	3 Moderate	1 Moderate	
	2 Low	4 Low	
The Granite Chief Wilderness Additions 0519-006	0 High	0 High	L
	3 Moderate	1 Moderate	
	2 Low	5 Low	

Key [1] – Areas capability for wilderness designation

- Desirable ratings are High and Moderate
- Variety and Abundance of wildlife Natural and Free from Disturbance
- Outstanding opt for Solitude & Unconfined Rec. Special Feature and Values
- Manageability

Key [2] – Potential for other resource potentials beyond wilderness

- Desirable ratings are Low or Moderate
- Areas with high value for comm. Sites Areas with existing OHV or mechanized use Areas needing active vegetation restoration
- Areas having high mineral value
- Areas with unique character
- Lands committed thru contracts-wild conflicts

Key [3] – Determination of need for an area to be designated as wilderness

- Desirable rating is High
- Analysis narrative describes the degree to which it contributes to the overall National Wilderness Preservation System.

Stated Rating is a summary average based upon narrative of the six stated criteria.

Appendix D: LTBMU Climate Change Trend Assessment

A summary of current trends and probable future trends in climate and climate-driven processes in the Lake Tahoe Basin and the neighboring Sierra Nevada

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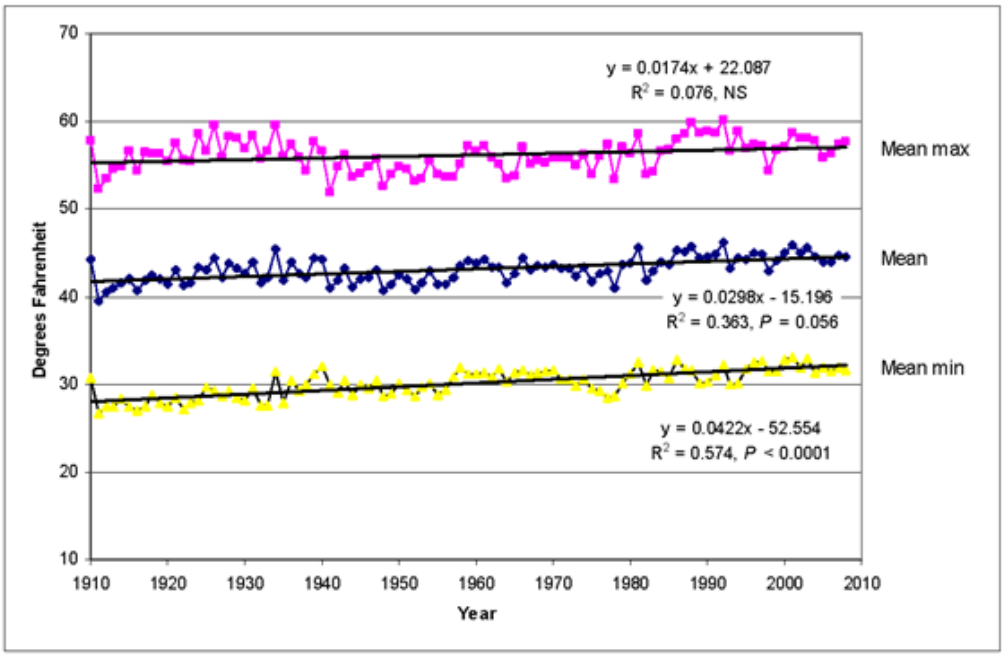
Local trends in climate over the past century

The data presented in this section are derived from the 98-year weather station record from Tahoe City, California, on the north shore of Lake Tahoe (WRCC 2008), and the annual State of the Lake Report published by the UC-Davis Tahoe Environmental Research Center (TERC 2008). Spatial data are also presented from the PRISM climate dataset, which extrapolates weather station records to the landscape for all years beginning in the late 19th century (Daly et al. 1994, PRISM 2010).

Temperature

Over the last century, mean annual temperature in the Lake Tahoe Basin (LTB) has risen by about two degrees Fahrenheit (Fig. D1). This trend is driven by a highly significant increase in mean minimum (i.e., nighttime) temperatures, which have risen by four degrees F since 1910. For the first time on record, the annual average of the monthly mean minima is now above the freezing point (Fig. 1). At the beginning of the last century, seven to eight months in a year could be expected to have average nighttime temperatures that fell below freezing. Today the average is closer to six months, and the trend is strongly downward. The average number of days in a year on which the average air temperature remains below freezing has dropped by 27 days since 1910 (78 to 51; TERC 2008). The LTB rise in nighttime temperatures is higher than in most California locations and may be linked to the thermal mass of Lake Tahoe, whose surface waters have increased in temperature by one degree F in only the last 25 years (TERC 2008).



Trend lines fit with simple linear regression, no transformations employed. Data from WRCC 2008.

Figure D 1. Annual mean, mean maximum, and mean minimum temperatures at Tahoe City, California, 1910-2008

Precipitation

The 98-year trend in LTB precipitation is shown in Fig. D2. Average annual precipitation has risen by almost 7 inches per year over the period, but there is very high interannual variability, such that the value predicted by the regression line in Fig. D2 is rarely representative of the actual annual mean. Of the months of the year, only August showed an even marginally significant increase in precipitation over the period of record (R2 = 0.034, P = 0.067), with the average August precipitation rising from about 0.2 to about 0.4 inches (1% of annual precipitation). There were no significant increases in precipitation by season, and the distribution of precipitation across the year has remained similar through the record (WRCC 2008). The 5-yr coefficient of variation in annual precipitation is rising over time (Fig. D3), which demonstrates that year-to-year variability in precipitation has increased over the course of the last century. Further evidence of high variability in recent annual precipitation sums can be seen in the last quarter-century of records: nine of the 20 wettest years have occurred since 1980, and two of the top three since 1995, but 2007 and 2008 are among the ten driest years on record. Mean annual snowfall has not changed significantly over the last century (TERC 2008), but when combined with the precipitation trend, it is obvious that the proportion of precipitation falling as snow (vs. rain) is dropping. At the beginning of the last century, about 54% of precipitation fell as snow, today the average is about 34%. Streamflow data show that peak snowmelt in the LTB is occurring 2½ weeks earlier today than at the beginning of the 1960s, when the record began (TERC 2008).

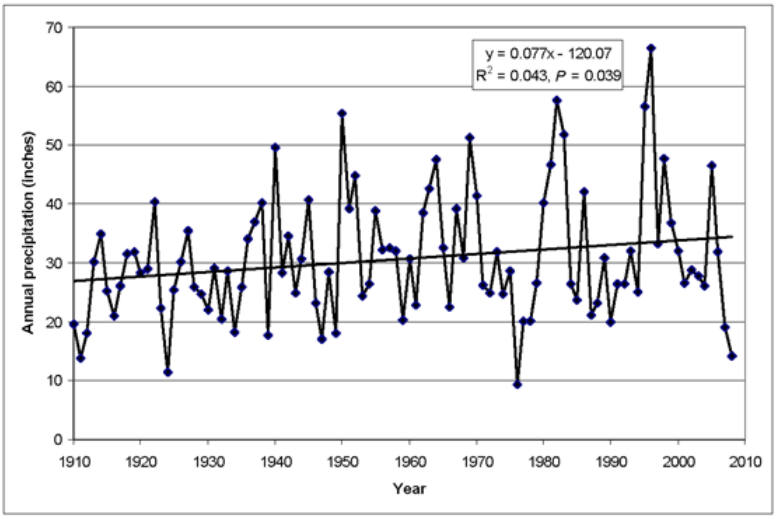


Figure D 2. Mean annual precipitation at Tahoe City, California, 1910-2008. Data from WRCC 2008.

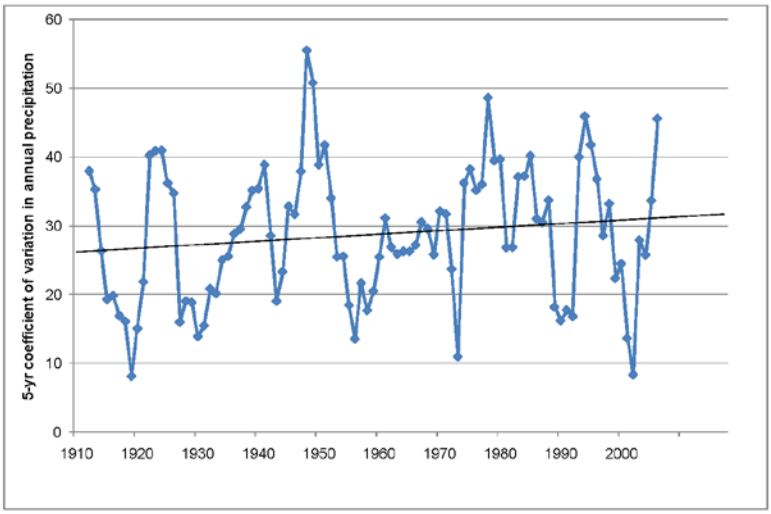
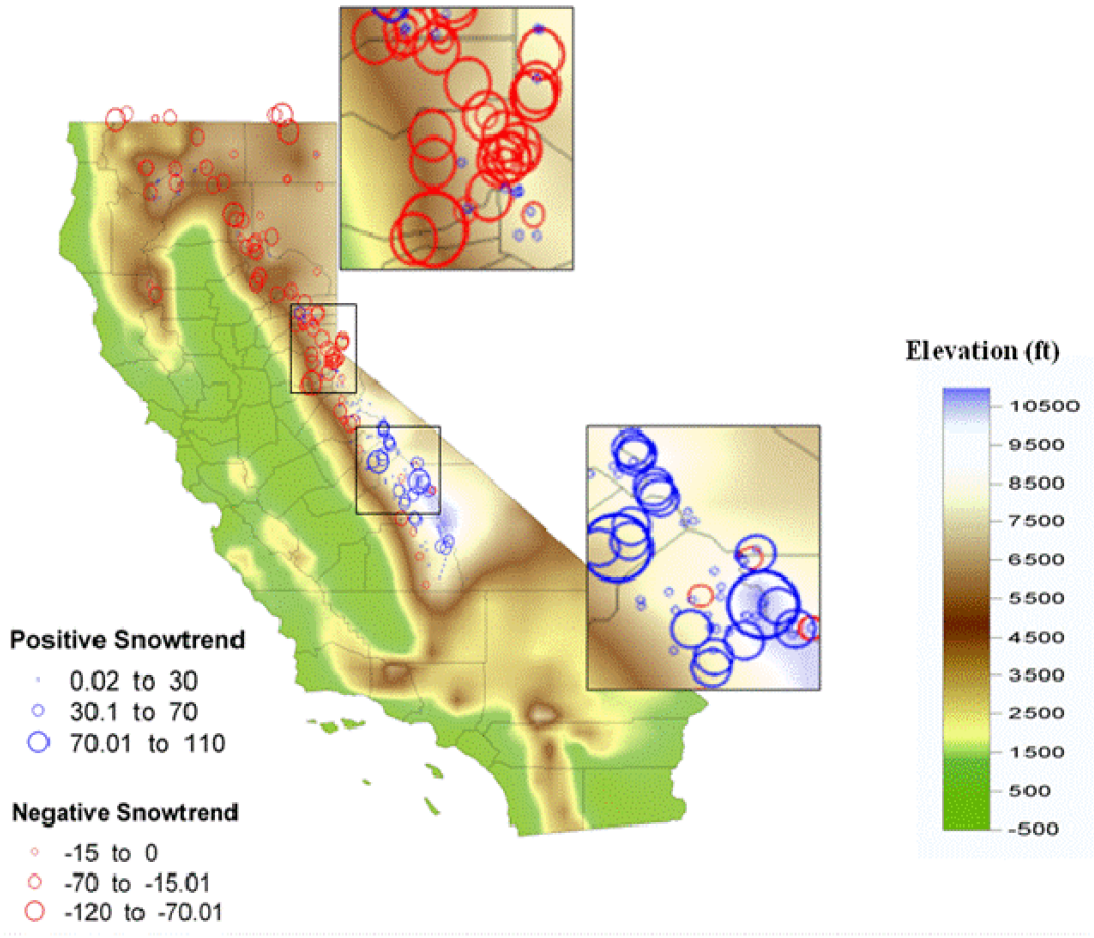


Figure D 3. Five-year coefficients of variation in annual precipitation at Tahoe City, California, 1910-2008. Data from WRCC 2008.

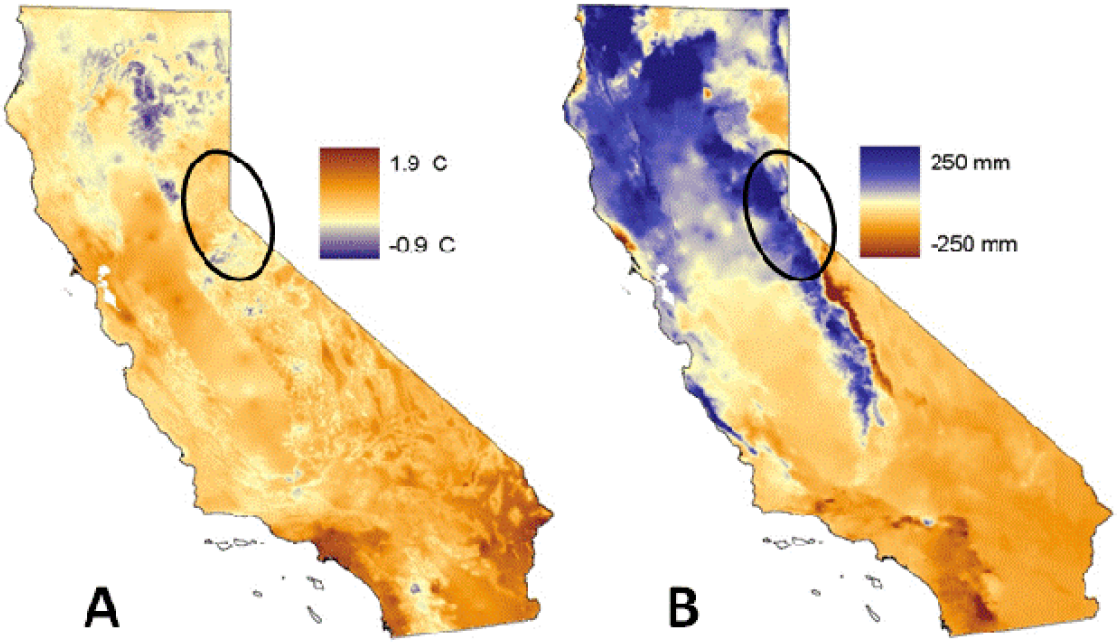
Snowpack measurements show a strong downward trend across northern California over the last ½ century, with the Sierra Nevada near Lake Tahoe experiencing decreases of >70% in snow water equivalent in many places (Fig. D4).



Red circles indicate percent decrease in snow water, blue circles indicate increase in snow water. From Moser et al. (2009).

Figure D 4. Trends in the amount of water contained in the snowpack ("snow water equivalent") on April 1, for the period 1950-1997.

The PRISM dataset shows that the area of the Sierra Nevada adjoining Lake Tahoe has experienced substantial increases in both temperature and precipitation over the last ¾ century (Fig. D5). This agrees with the trends from the Tahoe City station, but hides substantial variation among specific weather station sites.



The LTBMU is found in the middle of the circled area. Both temperatures and precipitation have risen across most of the circled area, although precipitation has generally dropped east of the Sierra Nevada crest. Graphic courtesy of S. Dobrowksi, Univ. of Montana.

Figure D 5. Spatial differences in mean annual temperature (A), and mean annual precipitation (B) between the 1930s and 2000s, as derived by the PRISM climate model.

Regional trends over the last century linked to climate change

Hydrology

Stewart et al. (2005) showed that the onset of spring thaw in most major streams in the central Sierra Nevada occurred 5-30 days earlier in 2002 than in 1948, and peak streamflow (measured as the center of mass annual flow) occurred 5-15 days earlier. During the same period, March flows in the studied streams were mostly higher by 5-20%, but June flows were mostly lower by the same amount; overall spring and early summer streamflow was down in most studied streams. Rising winter and spring temperatures appear to be the primary driver of these patterns (Stewart et al. 2005). Coats (2010) examined the shift in snowmelt timing in the Lake Tahoe Basin between 1972 and 2007 and found that the timing of the spring snowmelt peak occurred about two weeks earlier in 2007 than in 1972.

Forest Fires

Data on forest fire frequency, size, total area burned, and severity all show strong increases in the Sierra Nevada over the last two to three decades. Westerling et al. (2006) showed that increasing frequencies of large fires (>1000 acres) across the western United States since the 1980's were strongly linked to increasing temperatures and earlier spring snowmelt. The Sierra Nevada was one of two geographic areas of especially increased fire activity, which Westerling et al. (2006) ascribed to an interaction between climate and increased fuels due to fire suppression. Westerling et al. (2006) also identified the Sierra Nevada has being one of the geographic regions most likely to see further increases in fire activity due to future increases in temperature. Miller et al. (2009) showed that mean and maximum fire size, and total burned area in the Sierra Nevada have increased strongly between the early 1980's and 2007. Climatic variables explain very little of the pattern in fire size and area in the early 20th century, but 35-50% of the pattern in the last 25 years. The mean size of escaped fires in the Sierra Nevada was about 750 acres until the late 1970's, but the most recent ten-year average has climbed to about 1100 acres. Miller et al. (2009) also showed that forest fire severity (a measure of the effect of fire on vegetation) rose strongly during the period 1984-2007, with the pattern centered in middle elevation conifer forests. Fires at the beginning of the record burned at an average of about 17% high (stand-replacing) severity, while the average for the last ten-year period was 30%. Miller et al. (2009) found that both climate change and increasing forest fuels were necessary to explain the patterns they analyzed.

Forest Structure

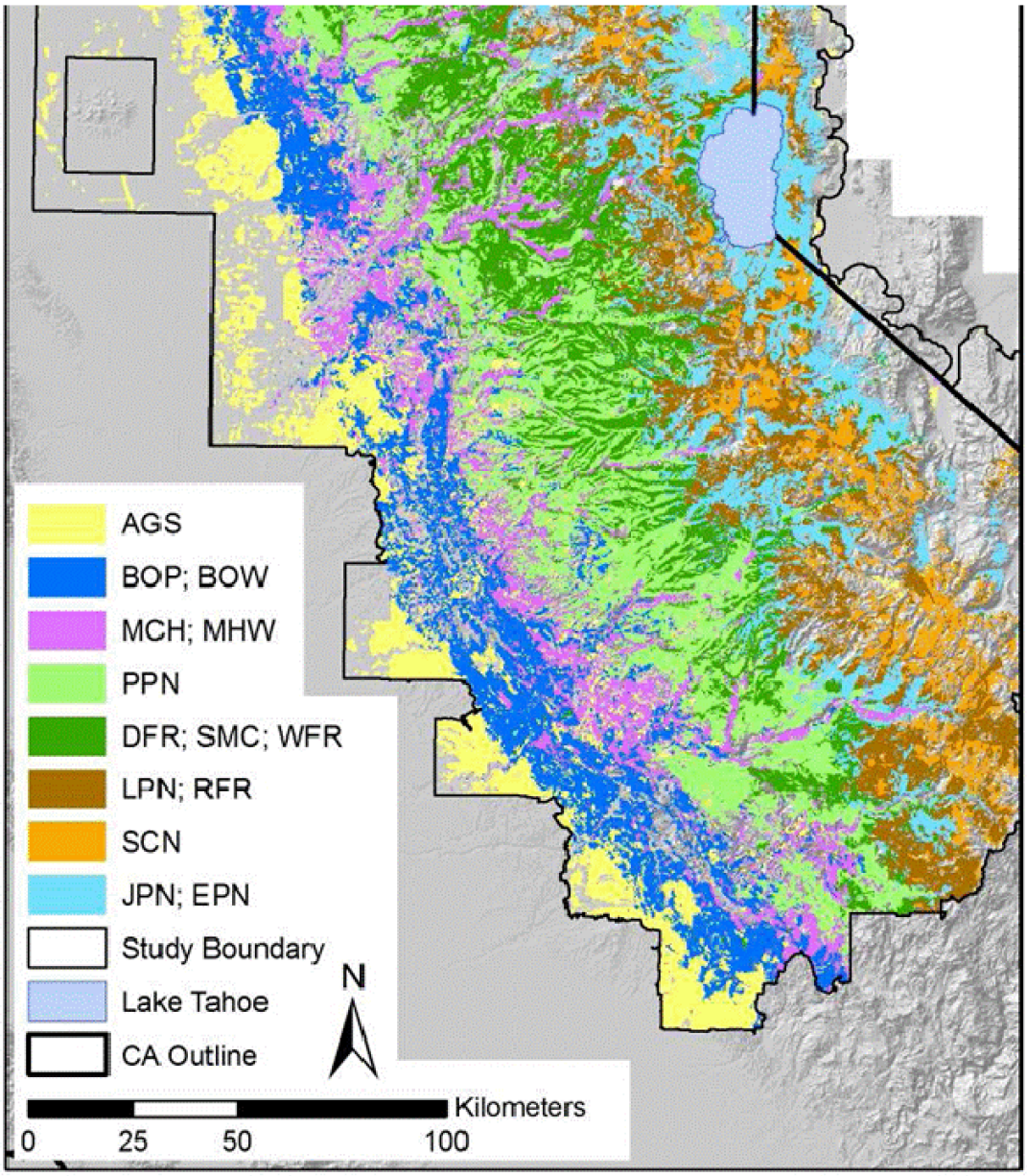
Fire suppression has been practiced as a federal policy since 1935. Pre-Euroamerican fire frequencies in high elevation forests such as red fir (>50 years in most places) and subalpine forest (>100 years) were long enough that fire suppression has had little or no impact on ecological patterns or processes (Miller et al. 2009). Higher elevation forests are also much more remote, less likely to have economic uses, and are often protected in Wilderness Areas and National Parks, so impacts by logging or recreation use are minimal. Subalpine tree growth has been shown to be strongly influenced by higher precipitation and warm summers (Graumlich 1991). Long-term changes in stand structure in higher elevation forests are thus more likely to represent responses to changes in exogenous factors like climate.

In the early 1930s, the Forest Service mapped vegetation in the Lake Tahoe Basin and neighboring National Forests, and sampled thousands of vegetation plots (Wieslander 1935). Bouldin (1999) compared the Wieslander plots with the modern FIA inventory and described changes in forest structure. In red fir forest, Bouldin (1999) found that densities of young trees had increased by about 40% between 1935 and 1992, but densities of large trees had decreased by 50% during the same period. In old-growth stands, overall densities and basal areas were higher, and the number of plots in the red fir zone dominated by shade-tolerant species increased at the expense of species like Jeffrey pine and western white pine. In old-growth subalpine forests, Bouldin (1999) found that young mountain hemlock was increasing in density and basal area while larger western white pine was decreasing. In whitebark pine stands, overall density was increasing due to increased recruitment of young trees, but species composition had not changed. Lodgepole pine appears to be responding favorably to increased warming and/or increased precipitation throughout the subalpine forest.

Bouldin (1999) also studied mortality patterns in the 1935 and 1992 datasets. He found that mortality rates had increased in red fir, with the greatest increases in the smaller size-classes. At the same time, in subalpine forests, lodgepole pine, western white pine, and mountain hemlock all showed decreases in mortality. The subalpine zone was the only forest type Bouldin (1999) studied where mortality had not greatly increased since the 1935 inventory. This suggests that climate change (warming, plus steady or higher precipitation) is actually making conditions better for some tree species in this stressful environment. Dolanc et al. (2010) recently completed a study that resampled Wieslander plots in the subalpine zone between Yosemite National Park and the Lake Tahoe Basin. Corroborating Boulding (1999), they found that growing conditions in the subalpine zone were probably better today than in the 1930's, as the density of small trees of almost all species had increased greatly in the 75 year period. Dolanc et al.'s (2010) direct plot-to-plot comparison also found that mortality of large trees had decreased density of the subalpine forest canopy, but the overall trend was for denser forests with no apparent change in relative tree species abundances.

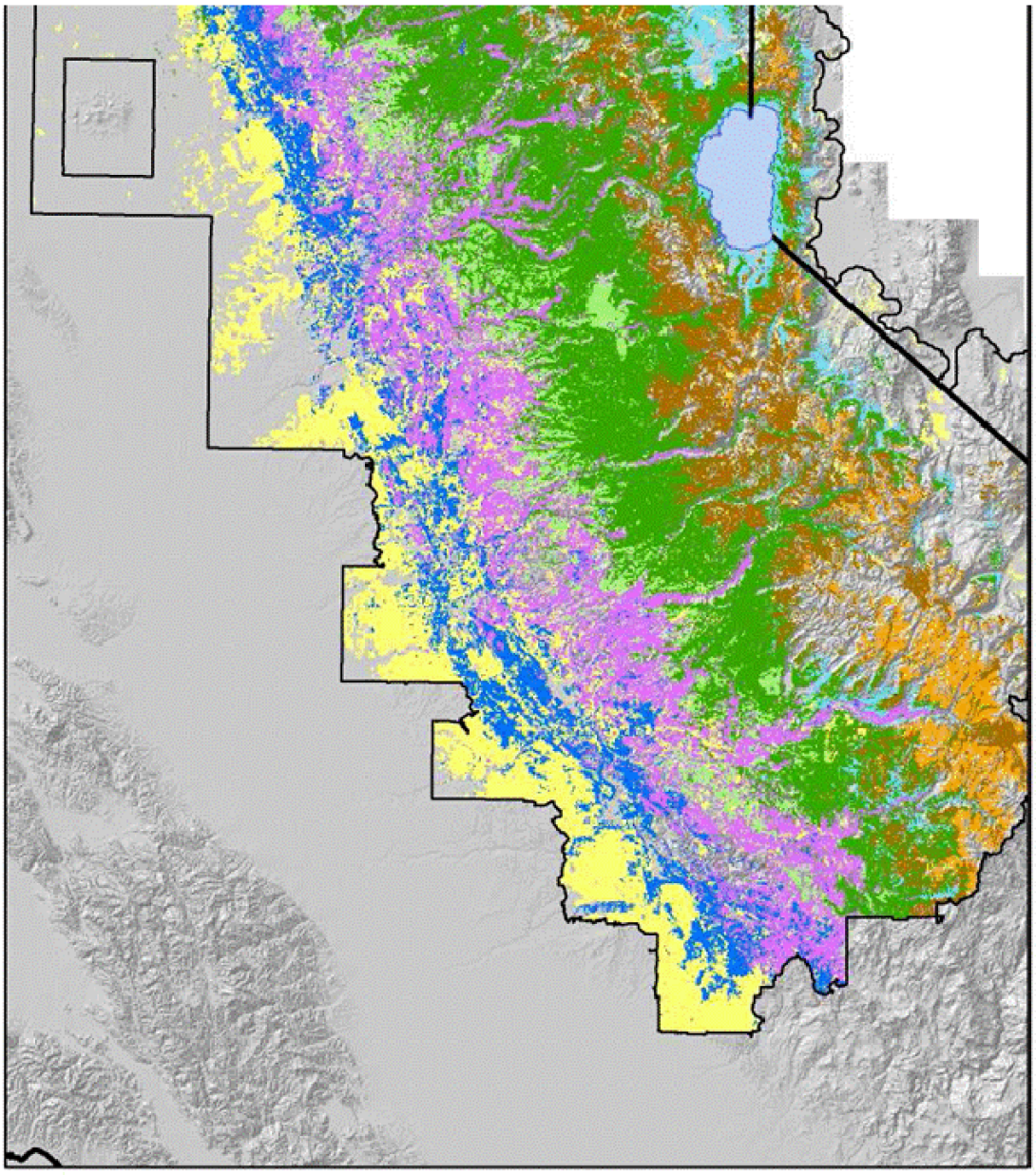
Van Mantgem et al. (2009) recently documented widespread increases in tree mortality in old- growth forests across the west, including in the Sierra Nevada. Their plots had not experienced increases in density or basal area during the 15-40 year period between first and last census. The highest mortality rates were documented in the Sierra Nevada, and in middle elevation forests (3300-6700 feet). Higher elevation forests (>6700 feet) showed the lowest mortality rates, corroborating the Bouldin (1999) findings. Van Mantgem et al. (2009) ascribed the mortality patterns they analyzed to regional climate warming and

associated drought stress. Comparisons of the 1930's Wieslander vegetation inventories and map with modern vegetation maps and inventories show large changes in the distribution of many Sierra Nevada vegetation types over the last 70-80 years (Fig. D6a, D6b; Bouldin 1999, Moser et al. 2009, Thorne and Safford, unpub. data). The principal trends are (1) loss of yellow pine dominated forest, (2) increase in the area of forest dominated by shade-tolerant conifers (especially fir species), (3) loss of blue oak woodland, (4) increase in hardwood dominated forests, (5) loss of subalpine and alpine vegetation, and (6) expansion of subalpine trees into previous permanent snowfields. Trends (4) through (6) appear to have a strong connection to climate warming, while trends (1) through (3) are mostly the product of human management choices, including logging, fire suppression, and urban expansion.



Mapped by the US Forest Service "Wieslander" mapping project. Maps digitized and vegetation types cross-walked to CWHR type by UC-Davis Information Center for the Environment. AGS = agriculture; BOP = blue oak/foothill pine; BOW = blue oak woodland; MCH = mixed conifer hardwood; MHW = mixed hardwood; PPN = ponderosa pine; DFR = Douglas-fir; SMC = Sierra mixed conifer; WFR = white fir; LPN = lodgepole pine; RFR = red fir; SCN = Subalpine conifer; JPN = Jeffrey pine; EPN = eastside pine.

Figure D 6. (A) Distribution of major vegetation types in the central and northern Sierra Nevada in the period 1932-1936.



Mapped by the US Forest Service Pacific Southwest Region Remote Sensing Laboratory. See Fig. 6 (A) for key and scale. The major patterns of change between 1934 and 2000 are: (1) loss of yellow pine (ponderosa and Jeffrey pine) dominated forest; (2) expansion of shade tolerant conifers (DFR, WFR, SMC); (3) loss of blue oak woodland; (4) increase in hardwood dominated forests; (5) loss of subalpine and alpine vegetation.

Figure D6. (B) Distribution of major vegetation types in the central and northern Sierra Nevada in 2000.

Wildlife

Between 1914 and 1920, the Museum of Vertebrate Zoology (MVZ) at the University of California Berkeley surveyed the terrestrial vertebrate fauna at 41 sites along a transect that extended from the western slope of Yosemite National Park to an area near Mono Lake (Grinnell and Storer 1924). In the past decade, MVZ resurveyed the Yosemite transect to evaluate the near century-long changes in Yosemite's vertebrate fauna across this elevation gradient, stretching across numerous vegetation types (Mortiz 2007, Moritz et al. 2008). By comparing earlier and recent MVZ small mammal surveys, Moritz et al. (2008) came to several conclusions: (1) the elevation limits of geographic ranges shifted primarily upward, (2) several high-elevation species (e.g., alpine chipmunk; *Tamias alpinus*) exhibited range contraction (shifted their lower range limit upslope), while several low-elevation species expanded their range upslope, (3) many species showed no change in their elevational range, (4) elevational range shifts resulted in minor changes in species richness and composition at varying spatial scales, (5) closely-related species responded idiosyncratically to changes in climate and vegetation, and (6) most upwards range shifts for high-elevation species is consistent with predicted climate warming, but changes in most lower- to mid-elevation species' ranges are likely the result of landscape-level vegetation dynamics related primarily to fire history.

Similar distribution patterns have been observed for other faunal taxa throughout the Sierra Nevada. Forister et al. (2010) tracked 159 species of butterflies over 35 years in the central Sierra Nevada and observed upwards shifts in the elevational range of species, a pattern consistent with a warming climate. Tingley et al. (2009) resurveyed bird distributions along the Grinnell transects in the entire Sierra Nevada and concluded that 91% of species tracked changes in temperature or precipitation over time and 26% of species tracked both temperature and precipitation. This suggests that birds move in response to changing climates in order to maintain environmental associations to which they are adapted. The authors also suggest that combining climate and niche models may be useful for predicting future changes in regional bird distributions (Tingley et al. 2009). In contrast with other faunal studies, Drost and Fellers (1996) found that most frog and toad species in Yosemite exhibited widespread decline over the past several decades, regardless of elevation. Primary factors contributing to this faunal collapse throughout the Sierra Nevada include introduced predators, a fungal pathogen, pesticides, and climate change (Wake and Vredenburg 2008).

Future predictions

Climate

Statewidemodels

Relatively few future-climate modeling efforts have treated areas as restricted as the State of California. The principal limiting factor is the spatial scale of the General Circulation Models (GCMs) that are used to simulate future climate scenarios. Most GCMs produce raster outputs with pixels that are 10,000's of km2 in area. To be used at finer scales, these outputs must be downscaled using a series of algorithms and assumptions – these finer-scale secondary products currently provide the most credible sources we have for estimating potential outcomes of long- term climate change for California. Another complication is the extent to which GCMs disagree with respect to the probable outcomes of climate change. For example, a recent comparison of 21 published GCM outputs that included California found that estimates of future precipitation ranged from a 26% increase per 1º C increase in temperature to an 8% decrease (Gutowski et al. 2000, Hakkarinen and Smith 2003). That said, there was some broad consensus: all of the reviewed GCMs predicted warming temperatures for California, and 13 of 21 predicted higher precipitation (three showed no change and five predicted decreases). According to Dettinger (2005), the most common prediction among the most recent models (which are considerably more complex and, ideally, more credible) is temperature warming by about 9° F by 2100, with precipitation remaining similar or slightly reduced compared to today. Most models agreed that summers will be drier than they are currently, regardless of levels of annual precipitation.

The most widely cited of the recent California-wide modeling efforts is probably Hayhoe et al. (2005). Hayhoe et al. (2005) used two contrasting GCMs (much warmer and wetter, vs. somewhat warmer and drier) under low and high greenhouse gas emissions scenarios to make projections of climate change impact for California over the next century. By 2100, under all GCM x emissions scenarios, April 1 snowpack was down by -22% to -93% in the 6,700-10,000 feet elevation belt, and the date of peak snowmelt was projected to occur from 3 to 24 days earlier in the season. Average temperatures were projected to increase by 2 to 4 degrees F in the winter, and 4-8 degrees in the summer. Finally, three of the four GCM x emissions scenarios employed by Hayhoe et al. (2005) predicted strong decreases in annual precipitation by 2100, ranging from -91 to -157%; the remaining scenario predicted a 38% increase.

Local models

Until recently, no studies had projected future climates specifically for the area of the Lake Tahoe Basin. Coats et al. (2010) downscaled the GFDL and PCM General Circulation Models (GCMs) from the original 100 x 100 km output grid to a 12 x 12 km grid and provided 21st century projections of future climate and hydrology trends for the LTB based on the IPCC A2 (strong increase in Greenhouse gases [GHGs]) and B1 (moderate increase in GHGs) emissions scenarios. Coats et al.'s (2010) results project strong upward trends in maximum and minimum temperatures, with an increase of up to 9°F by 2100 under the A2 emissions scenario (the equivalent of dropping the elevation of the LTB by over 2500 feet), but no strong trends in annual precipitation amount, except for a slight drying trend projected by the GFDL-A2 scenario toward the end of the

century. Coats et al. (2010) also project a continuing shift from snowfall to rain (from about 35% snowfall currently to 10-18% by 2100).

Hydrology

Sierra Nevada

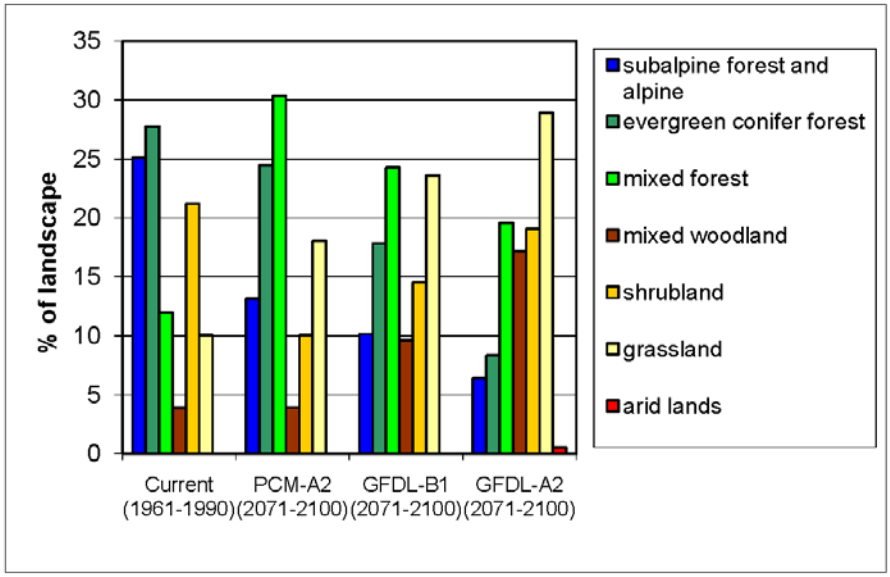
Miller et al. (2003) modeled future hydrological changes in California as a function of two contrasting GCMs (the same GCMs used in Hayhoe et al. [2005] and Lenihan et al. [2003; see below]) and a variety of scenarios intermediate to the GCMs. Miller et al. (2003) found that annual streamflow volumes were strongly dependent on the precipitation scenario, but changes in seasonal runoff were more complex. Predicted spring and summer runoff was lower in all of the California river basins they modeled, except where precipitation was greatly increased, in which case runoff was unchanged from today (Miller et al. 2003). Runoff in the winter and early spring was predicted to be higher under most of the climate scenarios because higher temperatures cause snow to melt earlier. Flood potential in California rivers that are fed principally by snowmelt (e.g., streams in and around Lake Tahoe) was predicted to increase under all scenarios of climate change, principally due to earlier dates of peak daily flows and the increase in the proportion of precipitation falling as rain. These increases in peak daily flows are predicted under all climate change scenarios, including those assuming reduced precipitation (Miller et al. 2003). The predicted increase in peak flow was most pronounced in higher elevation river basins, due to the greater reliance on snowmelt. If precipitation does increase, streamflow volumes during peak runoff could greatly increase. Under the wettest climate scenario modeled by Miller et al. (2003), by 2100 the volume of flow during the highest flow days could more than double in many Sierra Nevada rivers. This would result in a substantial increase in flood risk in flood-prone areas like Sacramento or Reno. According to Miller et al. (2003), increased flood risk is a high probability outcome of the continuation of current climate change trends, because temperature, not precipitation, is the main driver of higher peak runoff. If scales, these outputs must be downscaled using a series of algorithms and assumptions – these finer-scale secondary products currently provide the most credible sources we have for climate change leads not only to an increase in average precipitation but also a shift to more extreme precipitation, then peak flows would be expected to increase even more.

LakeTahoeBasin

In their recent assessment of potential climate change and hydrology trends in the Lake Tahoe Basin, Coats et al. (2010) project a continuing trend toward earlier snowmelt and runoff during the water year; increases in drought severity, especially toward the end of the century; and dramatic increases in flood magnitude in the middle third of the century, especially under the B1 emissions scenario. Current snowpack duration in the LTB is between 240 and 250 days. Under the most extreme future climate x emissions scenario (GFDL-A2), Coats et al. (2010) project a mean snowpack duration of only 184 days by the last third of the 21st century. The same scenario projects a loss in stream inflow into Lake Tahoe of 20-40% of baseline (average of 1967-1999) by 2100.

Vegetation

Lenihan et al. (2003, 2008) used a dynamic ecosystem model ("MC1") which estimates the distribution and the productivity of terrestrial ecosystems such as forests, grasslands, and deserts across a grid of 100 km2 cells. To this date, this is the highest resolution at which a model of this kind has been applied in California, but it is not of high enough resolution to be applied to the Lake Tahoe Basin as a unit. Based on their modeling results, Lenihan et al. (2003, 2008) projected that forest types and other vegetation dominated by woody plants in California would migrate to higher elevations as warmer temperatures make those areas suitable for colonization and survival. For example, with higher temperatures and a longer growing season, the area occupied by subalpine and alpine vegetation was predicted to decrease as evergreen conifer forests and shrublands migrate to higher altitudes (Fig. D7). Under their "wet future" scenarios, Lenihan et al. (2003, 2008) projected a general expansion of forests in northern California. With higher rainfall and higher nighttime minimum temperatures, broadleaf trees (especially oak species) were predicted to expand their distribution in many parts of the Sierra Nevada, and conifer-dominated forests were predicted to decrease in extent in the same areas. Under their "dry future" scenarios, Lenihan et al. (2003, 2008) predicted that grasslands would expand throughout the state, and that increases in the extent of tree-dominated vegetation would be minimal (Fig. 7). An expansion of shrublands into conifer types was also predicted, due to drought and increases in fire frequency and severity (see below). Hayhoe et al. (2005) also used the MC1 ecosystem model to predict vegetation and ecosystem changes under a number of different future greenhouse gas emissions scenarios. Their results were qualitatively similar to the Lenihan et al. (2003, 2008) results.



The LTBMU is found within this Ecological Section. The GFDL-B1 scenario = moderately drier than today, with a moderate temperature increase (<5.5° F); PCM-A2 = similar ppt. to today, with <5.5° temp. increase; GFDL-A2 = much drier than today and much warmer (>7.2° higher) All scenarios project significant loss of subalpine and alpine vegetation. Most scenarios project lower cover of shrubland (including west side chaparral and east side sagebrush), due principally to increasing frequencies and extent of fire. Large increases in the hardwood component of forests are projected in all scenarios. Large increases in cover of grassland are projected for the Section, principally at lower elevations. Conifer forest decreases in cover under all scenarios. From Lenihan et al. (2008).

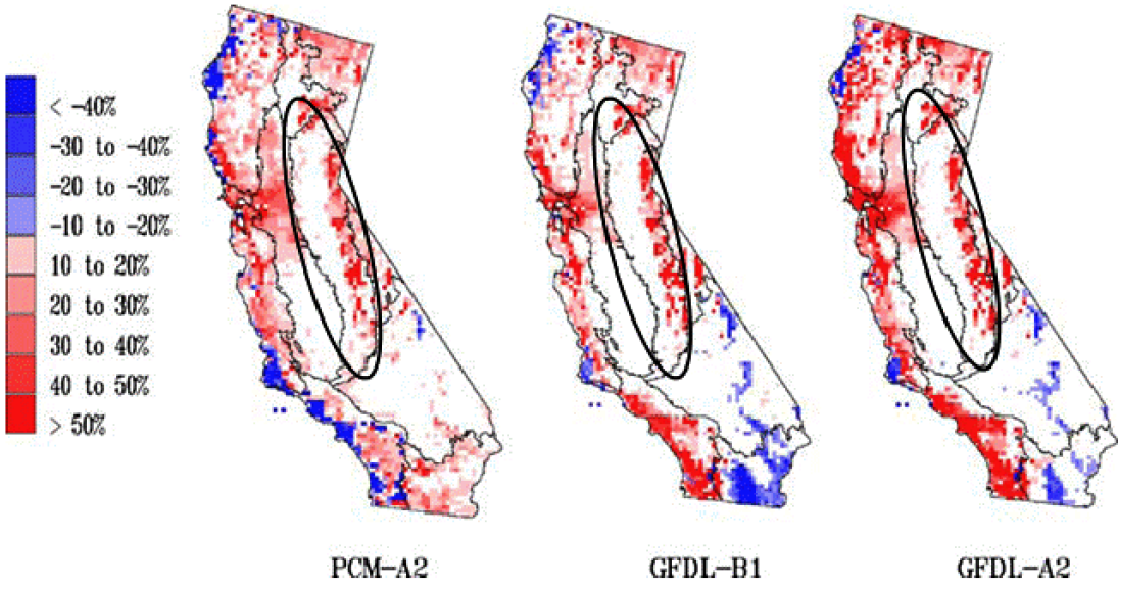
Figure D 7. MC1 outputs for the Sierra Nevada Ecological Section, current vs. future projections of vegetation extent.

Fire

The combination of warmer climate with higher CO2 fertilization will likely cause more frequent and more extensive fires throughout western North America (Price and Rind 1994, Flannigan et al. 2000); fire responds rapidly to changes in climate and will likely overshadow the direct effects of climate change on tree species distributions and migrations (Flannigan et al. 2000, Dale et al. 2001). A temporal pattern of climate-driven increases in fire activity is already apparent in the western United States (Westerling et al. 2006), and modeling studies specific to California expect increased fire activity to persist and possibly accelerate under most future climate scenarios, due to increased growth of fuels under higher CO2 (and in some cases precipitation), decreased fuel moistures from warmer dry season temperatures, and possibly increased thundercell activity (Price and Rind 1994, Miller and Urban 1999, Lenihan et al. 2003,2008; Westerling and Bryant 2006). By 2100, Lenihan et al.'s (2003, 2008) simulations suggest a c. 5% to 8% increase in annual burned area across California, depending on the climate scenario (Fig. 8). Increased frequencies and/or intensities of fire in coniferous forest in California will almost certainly drive changes in tree species compositions (Lenihan et al. 2003, 2008), and will likely reduce the size and extent of late-successional refugia (USFS and BLM 1994, McKenzie et al. 2004). Thus, if fire becomes more active under future climates, there may be significant repercussions for old growth forest and old growth-dependent flora and fauna.

A key question is to what extent future fire regimes in montane California will be characterized by either more or less severe fire than is currently (or was historically) the

case. Fire regimes are driven principally by the effects of weather/climate and fuel type and availability (Bond and van Wilgen 1996). 70 years of effective fire suppression in the American West have led to fuel-rich conditions that are conducive to intense forest fires that remove significant amounts of biomass (McKelvey et al. 1996, Arno and Fiedler 2005, Miller et al. 2009), and most future climate modeling predicts climatic conditions that will likely exacerbate these conditions. Basing their analysis on two GCMs under the conditions of doubled atmospheric CO2 and increased annual precipitation, Flannigan et al. (2000) predicted that mean fire severity in California (measured by difficulty of control) would increase by about 10% averaged across the state. Vegetation growth models that incorporate rising atmospheric CO2 show an expansion of woody vegetation on many western landscapes (Lenihan et al. 2003, Hayhoe et al. 2005), which could feedback into increased fuel biomass and connectivity and more intense (and thus more severe) fires. Use of paleoecological analogies also suggests that parts of the Pacific Northwest (including northern California) could experience more severe fire conditions under warmer, more CO2-rich climates (Whitlock et al., 2003). Fire frequency and severity (or size) are usually assumed to be inversely related (Pickett and White 1985), and a number of researchers have demonstrated this relationship for Sierra Nevada forests (e.g. Swetnam 1993, Miller and Urban 1999), but if fuels grow more rapidly and dry more rapidly – as is predicted under many future climate scenarios – then both severity and frequency may increase. In this scenario, profound vegetation type conversion is all but inevitable. Lenihan et al.'s (2003, 2008) results for fire intensity predict that large proportions of the Sierra Nevada landscape may see mean fire intensities increase over current conditions by the end of the century, with the actual change in intensity depending on future precipitation patterns.



Sierra Nevada is circled. Figure from Lenihan et al. (2008). See Fig. 7 for description of the climate and emissions scenarios (PCM-A2, GFDL- B1, GFDL-A2).

Figure D 8. Percent change in projected mean annual area burned for the 2050-2099 period relative to the mean annual area burned for the historical period (1895-2003).

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Appendix E: LTBMU Species Diversity

E.1. Forest-wide Biological Concepts

E.1.1. Biological Integrity

The biological integrity of aquatic or terrestrial ecosystems is defined as "the ability to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat of the region" (SNEP 1996). Further discussions of biological integrity are presented for the Lake Tahoe basin in the LTWA (2000) and for the Sierra Nevada Mountains in the SNEP (1996). Individual species are adapted to conditions within the natural range of variability and are presumed to derive the greatest benefits (e.g., increased fitness and reproductive success) from environmental conditions within this range.

E.1.2. Biological Diversity

The law (The Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) (88 Stat. 476, et seq.), as amended by the National Forest Management Act of 1976 (NFMA) (90 Stat. 2949, et seq.; 16 U.S.C. 1601-1614)), set standards for land and resource management planning across the National Forest System, including a requirement related to diversity of plant and animal communities. Specifically, NFMA states that plans must:

> "(B) Provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives…"

The 1982 planning rule that implements this law requires the following be in forest plans:

- Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native species in the planning area (219.19)
- Each alternative shall establish objectives for the maintenance & improvement of habitat for MIS (219.19(a))
- Habitat determined to be critical for threatened and endangered species shall be identified, and measures shall be prescribed to prevent the destruction or adverse modification of such habitat. Objectives shall be determined for threatened and endangered species that shall provide for, where possible, their removal from listing as threatened and endangered species through appropriate conservation measures, including the designation of special areas to meet the protection and management needs of such species. (219.19(a) (7)).

E.1.3. Connectivity and Insularity

The connectivity of suitable habitats is a bio geographical concept often used to describe the probability that a suitable habitat may be utilized based on its spatial relationship to other suitable habitats. The basic concept is founded on the idea that the probability of either of two suitable habitats having been, currently, or becoming occupied by a species increases with increases in the degree of connectivity between the suitable habitats. The mechanism of connectivity depends upon the species in question. Birds and fish obviously require different forms of habitat connectivity.

Insularity is a bio geographical concept that describes the inter-relationships of the conditions and processes between two or more habitats. For example, if a predator is known to forage along the boundary of two habitats (e.g., the edge of a meadow and a forest stand) then its prey species may require habitats located away from the habitat boundary (e.g., toward the interior of the forested stand) to survive and reproduce. The apparent suitability of habitats is, in this case, affected by the predator-prey relationship. Insularity may be described in relative degrees and may be either beneficial or detrimental depending on the ecological application (i.e., whether a given species is adapted to a high degree of insularity, as is often the case in island endemic species, or to a low degree of insularity, as is often the case in edge-adapted species).

Habitat fragmentation is a concept often used to describe how connectivity and insularity have changed over time at varying spatial scales (e.g., fragmentation at the stand versus landscape scale). Fragmentation can be defined as "loss of stand area, loss of stand interior area, changes in relative or absolute amounts of stand edge, and changes in insularity" (Turner 1989 in Buskirk and Ruggiero 1994).

E.1.4. Role of Fire

Fire plays a significant ecological role in Lake Tahoe Basin ecosystems. In many of the basin's vegetation types, fire is the primary disturbance agent setting the compositional and structural characteristics of the stand. The role that fire plays in a system is described by the system's fire regime, which is characterized by a number of attributes including fire return interval, fire intensity and severity, fuel consumption and spread patterns, seasonality etc. Different ecosystems and vegetation types have differing fire regimes inherent with the fuels, topography and climatic conditions associated with the system.

E.2. Species Viability and Species Lists

Species viability is depicted in the 1982 NFMA regulations in several locations (219.19 (a), 219.26, 219.27(a)(5-6), and 219.27(g) and all have been addressed and detailed in various sections of the Revised Forest Plan and incorporated into the alternative design in the Final EIS, as well as in associated Appendices and the biological assessment (BA) and biological evaluations (BE) as part of the overall Forest Planning process as required by the regulations. The regulations specific to species viability state:

Sec. 219.19 Fish and wildlife resource. Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. In order to insure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area.

(a) Each alternative shall establish objectives for the maintenance and improvement of habitat for management indicator species selected under paragraph (g)(1) of this section, to the degree consistent with overall multiple use objectives of the alternative. To meet this goal, management planning for the fish and wildlife resource shall meet the requirements set forth in paragraphs (a)(1) through (a)(7) of this section.

(1) In order to estimate the effects of each alternative on fish and wildlife populations, certain vertebrate and/or invertebrate species present in the area shall be identified and selected as management indicator species and the reasons for their selection will be stated. These species shall be selected because their population changes are believed to indicate the effects of management activities. In the selection of management indicator species, the following categories shall be represented where appropriate: Endangered and threatened plant and animal species identified on State and Federal lists for the planning area; species with special habitat needs that may be influenced significantly by planned management programs; species commonly hunted, fished, or trapped; non-game species of special interest; and additional plant or animal species selected because their population changes are believed to indicate the effects of management activities on other species of selected major biological communities or on water quality. On the basis of available scientific information, the interdisciplinary team shall estimate the effects of changes in vegetation type, timber age classes, community composition, rotation age, and year-long suitability of habitat related to mobility of management indicator species. Where appropriate, measures to mitigate adverse effects shall be prescribed.

(2) Planning alternatives shall be stated and evaluated in terms of both amount and quality of habitat and of animal population trends of the anagement indicator species.

(3) Biologists from State fish and wildlife agencies and other Federal agencies shall be consulted in order to coordinate planning for fish and wildlife, including opportunities for the reintroduction of extirpated species.

(4) Access and dispersal problems of hunting, fishing, and other visitor uses shall be considered.

(5) The effects of pest and fire management on fish and wildlife populations shall be considered.

(6) Population trends of the management indicator species will be monitored and relationships to habitat changes determined. This monitoring will be done in cooperation with State fish and wildlife agencies, to the extent practicable.

(7) Habitat determined to be critical for threatened and endangered species shall be identified, and measures shall be prescribed to prevent the destruction or adverse modification of such habitat. Objectives shall be determined for threatened and endangered species that shall provide for, where possible, their removal from listing as threatened and endangered species through appropriate conservation measures, including the designation of special areas to meet the protection and management needs of such species.

Sec. 219.26 Diversity. Forest planning shall provide for diversity of plant and animal communities and tree species consistent with the overall multiple-use objectives of the planning area. Such diversity shall be considered throughout the planning process. Inventories shall include quantitative data making possible the evaluation of diversity in terms of its prior and present condition. For each planning alternative, the interdisciplinary team shall consider how diversity will be affected by various mixes of resource outputs and uses, including proposed management practices.

Sec 219.27 Management Requirements. (a 5-6) and (g):

(a) Resource protection. All management prescriptions shall:

(5) Provide for and maintain diversity of plant and animal communities to meet overall multiple-use objectives, as provided in paragraph (g) of this section;

(6) Provide for adequate fish and wildlife habitat to maintain viable populations of existing native vertebrate species and provide that habitat for species chosen under Sec.

219.19 is maintained and improved to the degree consistent with multiple-use objectives established in the plan;

(g) Diversity. Management prescriptions, where appropriate and to the extent practicable, shall preserve and enhance the diversity of plant and animal communities, including endemic and desirable naturalized plant and animal species, so that it is at least as great as that which would be expected in a natural forest and the diversity of tree species similar to that existing in the planning area. Reductions in diversity of plant and animal communities and tree species from that which would be expected in a natural forest, or from that similar to the existing diversity in the planning area, may be prescribed only where needed to meet overall multiple-use objectives. Planned type conversion shall be justified by an analysis showing biological, economic, social, and environmental design consequences, and the relation of such conversions to the process of natural change.

The implementation of the species viability provision of the 1982 NFMA regulations as stated above for the revised Forest Plan were accomplished by:

- Describing the ecological context of the planning area (refer to EIS)
- Identifying species for which there may be a viability concern (refer to Table E5 in Appendix E)
- Information presented on the species for which there may be a viability concern (refer to Section E.2. of Appendix E, Table E5 in Appendix E, the Chapter 3 analysis for species in the EIS, including Management Indicator Species, the Biological Assessment, and the Biological Evaluation reports).
- Species groups were formed where needed for habitat associations (refer to Forest Plan (e.g. cliff nesting raptors)
- Conservation for species were addressed throughout the Forest Plan in the creation of species refuge area (SRA), in the development of desired conditions, strategies, objectives, and standard & guidelines, all in order to obtain approaches for managing for diversity of habitat and species
- Multiple LRMP alternatives were developed, all of which consider the needs for habitat to meet species diversity needs.
- The effects on viability for species have been addressed in all of the LRMP alternatives described in Chapter 3 and the biological evaluations,
- Monitoring for selected species is described in detail in Appendix A.

The steps shown above are associated with the specific NFMA regulations related to species viability and have been integrated into the Revised Forest Plan, Final EIS, associated Appendices and biological assessment (BA) and biological evaluations (BE) where appropriate as part of the overall Forest Planning process as required by the regulations.

The design of the Revised Forest Plan (LRMP) was created to maintain species viability where that is possible and it is based on the best available science at the time of writing. The LRMP's standard and guidelines (S&G) with associated desired condition, strategies, objectives, and limited operating periods (Appendix E – E.2.5) have been developed for maintaining viability but effects on viability cannot be determined at this programmatic scale since the plan does not authorize any activities that might actually cause adverse impacts to species or habitats (refer to Appendix O). Rather, any impacts to species (beneficial or otherwise) only come from site-specific activities and project-level decisions, of which the scope, location, and design are unclear at the time of the LRMP approval.

The specifications (i.e. desired conditions; S&Gs) in the LRMP have set the parameters on the scope of future project activities, and in no way require (or even encourage) projects to be designed to maximize outputs. The LRMP is not the sole constraint on project-level activities and project-level decisions can (and usually do) include additional design features to minimize adverse impacts to species.

It is understood that new science is likely to be developed between the time of writing the LRMP and the time when projects are implemented, which can lead not only to different project design features but also to LRMP amendments as necessary to maintain viability of the selected species. It is also understood that the LTBMU is much smaller in size than most Forest Service units and it does not (cannot) provide for viability within the planning unit area for many of the wide ranging native vertebrate species based on its small size and geographic location between the Great Basin of Nevada and the Sierra Nevada mountain range. However, the LTBMU does function and provide for conservation of species over time by providing for habitat to support species reproductive individuals and provide for connectivity to surrounding habitat that allows for greater interaction and reproductive function for wide ranging species.

The identification of selected species to be brought forward in species specific discussions in the LRMP (Figure E1), and those that relate to viability consideration in the LRMP, are described in detail in the following sections of this Appendix (E). Refer to Table E5 for the full list of species considered for the LRMP and where selected species are addressed in the Final LRMP.

For species selected as “secure” those are noted as having “general species and habitat management guidance” and those species considered as “not secure” are those noted as having “species specific management direction guidance”. For species that are “not secure” - they are also on species lists (threatened, endangered, proposed, and or candidate species)maintained by the United States Department of Interior Fish & Wildlife Service (FWS), considered as a management indicator species identified by the Pacific Southwest Region of the Forest Service, and/or the Regional Forester Sensitive Species list.

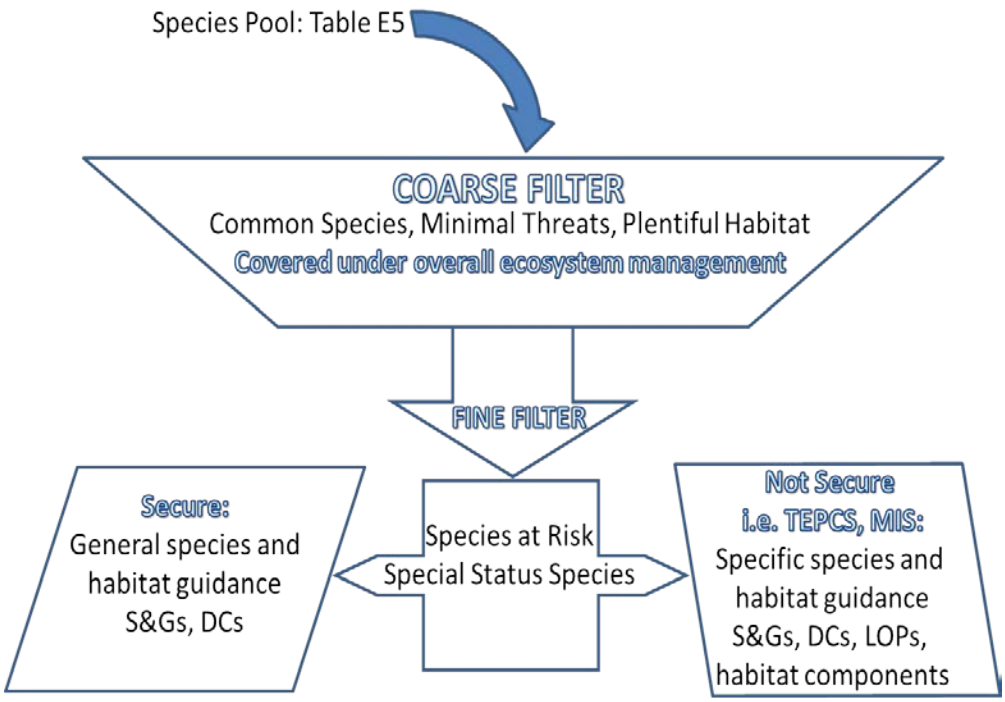
Species Pool: Table E5
COARSE FILTER
Common Species, Minimal Threats, Plentiful Habitat
Covered under overall ecosystem management
FINE FILTER
Secure:
General species and habitat guidance S&Gs, DCs
Species at Risk
Special Status Species
Not Secure
i.e. TEPCS, MIS:
Specific species and habitat guidance S&Gs, DCs, LOPs, habitat components

Figure E 1. Species-at-risk viability evaluation process diagram.

For species considered as not secure and which fall under various species lists, biological documents (i.e. BE and BA) have been prepared for the FEIS and Forest Plan and are available upon request. This section briefly highlights the purpose of those documents and the species considered for the FEIS and the BE and BA.

The purpose of a **BA** is to present an analysis of effects for the proposed project on federally listed endangered, threatened, candidate, and proposed species and their habitats. These federally listed species are managed under the authority of the Endangered Species Act (ESA) and the NFMA. The ESA requires federal agencies to ensure that all actions are not likely to jeopardize the continued existence of any federally listed species. The ESA requires that a BA be written and that the analysis conducted determine whether formal consultation or conference is required on the preferred alternative with the USDI Fish and Wildlife Service. The BA is also prepared in compliance with the requirements of the ESA, Forest Service Manual 2670, and provides for compliance with Code of Federal Regulations (CFR) 50-402.12.

The purpose of a **BE** is to document Forest Service programs or activities in sufficient detail to determine how an action or proposed action may affect any threatened, endangered, proposed, candidate, or sensitive species and their habitats (FSM 2670.5). FSM 2672.4 directs us to complete the biological evaluation for all Forest Service planned, funded, executed, or permitted programs and activities for possible effects on Federally listed threatened, endangered, proposed, candidate, or species listed as sensitive by the Pacific Southwest Regional Forester (i.e. sensitive species). The BE, therefore, provides a process through which potential effects of the proposed action on sensitive species are evaluated and considered during the planning and review process. Part of the BE is completed to determine whether a proposed action or any of the alternatives will result in a trend toward the sensitive species becoming federally listed.

E.2.1. FWS - List of Threatened, Endangered, Proposed, and Candidate Species for the LTBMU

The list of species considered as federally threatened, endangered, proposed, or as a candidate for listing under the Endagered Species Act (ESA) for the LTBMU is maintained by U.S.D.I. Fish and Wildlife Service (FWS) and is based on the most recent FWS federal register listings. The list also includes any listed and or proposed critical habitats for species.

The FWS list is periodically updated by the FWS as species become listed or delisted for the LTBMU. The most recent list for the LTBMU can be found on the FWS website at:

http://www.fws.gov/sacramento/ES_Species/Lists/es_species_lists-overview.htm

The FWS updated their species list generator in early 2015, thus some changes have occurred to the list of species for the LTBMU, however, it can be noted that the LTBMU is outside the geographic range of the Pacific fisher, North American Wolverine, Western yellowbilled cuckoo, Central Valley steelhead, Delta smelt, and Yosemite toad – all of which at one point or another through the time period of the revision process has been on the FWS species list for the LTBMU.

The list of Threatened, Endangered, Proposed, and Candidate species and or critical habitat listed or proposed that occur on the LTBMU and that have been analyzed for the LTBMU FPR through the Biological Assessment and has had consultation completed with the FWS through a Biological Opinion (ref #: 2014-F-0167) are shown below with their current listing status:

Endangered:

- Sierra Nevada Yellow-legged Frog (*Rana sierrae*)

Threatened:

- Lahontan cutthroat trout (*Oncorhynchus clarkia henshawi)*

Proposed Endangered:

- Critical Habitat for Sierra Nevada Yellow-legged Frog (*Rana sierrae*)

Candidate:

- Tahoe yellow-cress (*Rorippa subumbellata*)
- Whitebark Pine (*Pinus albicaulis)*

E.2.2. USFS List of Sensitive Species for the LTBMU

The list of Region 5 sensitive species is maintained by the Pacific Southwest Region - Regional Office and has been in the process of being updated throughout the timeperiod of the LTBMU Forest Plan Revision process. In June of 2013, an update to the sensitive species list was released. The species listed in Table E1 are those species that are currently listed as Forest Service Sensitive (FSS) for the LTBMU, as revised by the Regional Forester of Region 5 on June 30, 2013

Table E 1. Forest Service Sensitive (FSS) List for the LTBMU.

FSS - Group	Common Name	Scientific Name
Amphibians	**Sierra Nevada yellow-legged frog**	*Rana sierrae*
Birds	**Bald Eagle**	*Haliaeetus leucocephalus*
	California Spotted Owl	*Strix occidentalis occidentalis*
	Northern Goshawk	*Accipiter gentiles*
	Willow Flycatcher	*Empidonax traillii adastus*
	Great Gray Owl	(*Strix nebulosa*)
Fish	**Lahontan Lake tui chub**	(*Gila bicolor pectinifer)*
Invertebrate	**Great Basin rams-horn**	*Helisoma newberryi newberryi*
	Western bumble bee	*Bombus occidentalis*
Mammals	**American marten**[1]	*Martes americana*
	California wolverine	*Gulo gulo luteus*
	Townsend's big-eared bat	*Corynorhinus townsendii*
	Fringe-tailed myotis	*Myotis thysanodes*
	Pallid bat	*Antrozous pallidus*
Plants	**Blandow's bog moss.**	*Helodium blandowii*
	Bolander's candle moss.	*Bruchia bolanderi*
	Branched collybia.	*Dendrocollybia racemosa*
	Blandow's bog moss	*Helodium blandowii*
	Broad-nerved hump-moss.	*Meesia uliginosa*
	Common moonwort.	*Botrychium lunaria*
	Cup Lake draba.	*Draba asterophora var macrocarpa*
	Donner Pass buckwheat	*Eriogonum umbellatum* var. *torreyanum*
	Galena Creek rock cress.	*Arabis rigidissima var demota*

FSS - Group	Common Name	Scientific Name
Plants	**Goldencarpet buckwheat**	*Eriogonum luteolum* var. *saltuarium*
	Kellogg's lewisia.	*Lewisia kelloggii ssp.hutchisonii*
	Kellogg's lewisia.	*Lewisia kelloggii ssp kelloggii*
	Long-petaled lewisia.	*Lewisia longipetala*
	Mineral King draba	*Draba cruciata*
	Mingan moonwort.	*Botrychium minganense*
	orthotrichum moss	*Orthotrichum praemorsum*
	Plumas ivesia	*Ivesia sericoleuca*
	Scalloped moonwort.	*Botrychium crenulatum*
	Short-leaved hulsea.	*Hulsea brevifolia*
	Slender moonwort.	*Botrychium lineare*
	Starved daisy.	*Erigeron miser*
	Tahoe draba.	*Draba asterophora var asterophora*
	Tahoe yellow cress.	*Rorippa subumbellata*
	Tiehm's rock cress.	*Boechera tiehmii*
	Tulare rockcress	*Boechera tularensis*
	Upswept moonwort.	*Botrychium ascendens*
	Goward's water fan	*Peltigera gowardii*
	Western goblin	*Botrychium montanum*
	White bark Pine	*Pinus albicaulis*

E.2.3. TRPA Threshold Species and Sensitive Species

In order to help maintain and protect natural resources in the Lake Tahoe Basin, the Tahoe Regional Planning Compact formed the Tahoe Regional Planning Agency (TRPA) Regional Plan. Two documents provide guidelines for management of special status species: the Goals and Policies (TRPA 1986) and the Code of Ordinances and Rules of Procedure (TRPA 2012).

For fisheries and wildlife resources, TRPA created and adopted environmental threshold carrying capacities ("thresholds" or "threshold standards") The Forest Service analyzes environmental consequences for the TRPA threshold species (listed in Table E2) to support attainment of the TRPA environmental threshold carrying capacities for fisheries and wildlife.

For botanical resources, TRPA designated five plants species as Sensitive: *Rorippa subumbellata* (Tahoe yellow cress); *Arabis rigidissima var. demota* (Galena Creek rock cress); *Lewisia longipetala* (long-petaled Lewisia); *Draba asterophora v. macrocarpa* (Cup Lake draba); and

*Draba asterophora v. asterophora (*Tahoe draba). In addition, TRPA strives for "non-degradation of the natural qualities of any plant community that is uncommon to the Basin or of exceptional scientific, ecological, or scenic value" (TPRA 2012). The direction specifically applies but is not limited to: deep-water plants of Lake Tahoe; Grass Lake; Osgood Swamp; Hell Hole; Upper Truckee Marsh; Taylor Creek Marsh; Freel Peak Cushion Plant Community; and Pope Marsh.

The Forest Service analyzes environmental consequences for TRPA sensitive plants species and uncommon plant communities to meet the standards and guidelines outlined in the 2012 Code of Ordinances.

Additional information and updates to this list can be found at the TRPA website: http://www.trpa.org/.

Table E 2. TRPA Threshold Species List

TRPA Threshold Species	Population Sites	Disturbance Zone (mi.)
Northern goshawk (*Accipter gentiles*)	12	0.50
Osprey (*Pandion haliaetus*)	4	0.25
Bald eagle (winter) (*Haliaeetus leucocephalus*)	2	Mapped
Bald eagle (nesting)	1	0.50
Golden eagle (*Aquila chrysaetos*)	4	0.25
Peregrine falcon (*Falco peregrinus anatum*)	2	0.25
Waterfowl	18	Mapped
Mule deer (*Odocoileus hemionus*)	Critical fawning habitat	Meadows-Critical fawning habitat is mapped

E.2.4. Invasive Species

The LTBMU has identified and mapped areas on the Forest that include species identified as invasive by California Department of Food and Agriculture's (CDFA), Nevada Department of Agriculture (NDA), California Invasive Plant Council, Lake Tahoe Basin Weed Coordinating Group, and Lake Tahoe Aquatic Invasive Species Coordinating Committee .

Invasive species rankings incorporates ecological impacts, invasive potential, and potential for effective management and control. High priority species are species that have likelihood for high ecological impacts, a high probability for invasion, and potential for effective management and control. The LTBMU works with interagency working groups to identify high, medium and low ranks for invasive species.

E.2.4.1. Terrestrial Invasive Plant Species

There are several entities that maintain invasive plant lists that are utilitized for management of terrestrial invasive plant speices on LTBMU.

The NDA maintains a state noxious weed list that categorizes species into three categories: Category A—Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations. Category B—Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur. Category C—Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer. (http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm)

The CDFA maintains a state noxious weed list that categorizes species into four categories: A--Eradication or containment is required at the state or county level. B—Eradication or containment is at the discretion of the County Agricultural Commissioner. C--Require eradication or containment only when found in a nursery or at the discretion of the County Agricultural Commissioner. Q—Require temporary “A” action pending determination of a permanent rating. (http://www.cdfa.ca.gov/phpps/ipc/)

California Invasive Plant Council (Cal-IPC) maintains an online invasive plant inventory (2007) that categorizes species into four categories: High—Species having severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Moderate—Species having substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Limited—Species that are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Alert—Species with significant potential for invading new ecosystems. (http://www.cal-ipc.org/ip/inventory/weedlist.php)

Lake Tahoe Basin Weed Coordinating Group (LTBWCG) maintains a priority weed list that is updated annually and categorizes species in two groups: Group 1--Watch for, report, and eradicate immediately. Group 2--Manage infestations with the goal of eradication.

The Forest Service reviews the lists created by the above entities and then prioritizes species known to occur on or very near LTBMU as follows: High—Species that have a large ecological impact or invasive potential; species that are easily controlled. Medium—Species that have a moderate ecological impact or invasive potential; species that may be difficult to control. Low—Species that have a low ecological impact or invasive potential; species that require substantial effort to control. As conditions change, new species may be found. As new species are documented, they are evaluated for inclusion on the LTBMU list. Addition of new species may change prioritization of other species. As such, the list is continuously updated with the most recent update occurring in April of 2015

Terminology

Control: With respect to invasive species (plant, pathogen, vertebrate, or invertebrate species), control is defined as any activity or action taken to reduce the population, contain, limit the spread, or reduce the effects of an invasive species. Control activities are generally directed at

established free-living infestations, and may not necessarily be intended to eradicate the targeted infestation in all cases. FSM 2900, Invasive Species Management

Early Detection: The process of finding, identifying, and quantifying new, small, or previously unknown infestations of aquatic or terrestrial invasive species prior to (or in the initial stages of) its establishment as free-living expanding population. Early detection of an invasive species is typically coupled with integrated activities to rapidly assess and respond with quick and immediate actions to eradicate, control, or contain it. FSM 2900, Invasive Species Management

Eradication: With respect to invasive species (plant, pathogen, vertebrate, or invertebrate species), eradication is defined as the removal or elimination of the last remaining individual invasive species in the target infestation on a given site. It is determined to be complete when the target species is absent from the site for a continuous time period (that is, several years after the last individual was observed). Eradication of an infestation of invasive species is relative to the time-frame provided for the treatment procedures. Considering the need for multiple treatments over time, certain populations can be eradicated using proper integrated management techniques. FSM 2900, Invasive Species Management

Invasive Species: Executive Order 13112 defines an invasive species as "an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health." The Forest Service relies on Executive Order 13112 to provide the basis for labeling certain organisms as invasive. Based on this definition, the labeling of a species as "invasive" requires closely examining both the origin and effects of the species. The key is that the species must cause, or be likely to cause, harm and be exotic to the ecosystem it has infested before we can consider labeling it as "invasive". Thus, native pests are not considered "invasive", even though they may cause harm. Invasive species infest both aquatic and terrestrial areas and can be identified within any of the following four taxonomic categories: Plants, Vertebrates, Invertebrates, and Pathogens. Additional information on this definition can be found in Executive Order 13112. FSM 2900, Invasive Species Management

Invasive Species Management: Activities to prevent, control, contain, eradicate, survey, detect, identify, inventory, and monitor invasive species; includes rehabilitation and restoration of affected sites and educational activities related to invasive species. Management actions are based upon species-specific or site-specific plans (including forest plans, IPM plans, watershed restoration plans, and so forth), and support the accomplishment of plan goals and objectives and achieve successful restoration or protection of priority areas identified in the respective plan(s). FSM 2900, Invasive Species Management

Native Plant Species: A plant species which occurs naturally in a particular region, state, ecosystem and habitat without direct or indirect human actions. FSM 2070, Vegetation Ecology

Noxious Weed: Defined for the Federal Government in the Plant Protection Act of 2000 as "any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment." The term typically describes species of plants that have been determined to be undesirable or injurious in some capacity. State statues for noxious weeds vary widely, with some States lacking any laws defining or regulating noxious weeds. Depending on the individual State law, some plants listed by a State statute as "noxious" may be native plants which that State has determined to be undesirable. When the species are native, they are not considered invasive species by the Federal Government. FSM 2900, Invasive Species Management

Plant Materials: Seeds, spores, parts of plants or whole plants. FSM 2070, Vegetation Ecology

Prevention: Any activity or action taken to reduce or eliminate the chance of an invasive species entering or becoming established in a particular area. Preventative activities can include projects for education and awareness as well as more traditional prevention activities such as vehicle/equipment cleaning, boat inspections, or native plant restoration plantings. FSM 2900, Invasive Species Management

Rapid Response: With respect to invasive species (plant, pathogen, vertebrate, or invertebrate species), rapid responses are defined as the quick and immediate actions taken to eradicate, control, or contain infestations that must be completed within a relatively short time to maximize the biological and economic effectiveness against the targeted invasive species. Depending on the risk of the targeted invasive species, rapid response actions may be supported by an emergency situation determination and emergency considerations would include the geographic extent of the infestation, distance from other known infestations, mobility and rate of spread of the invasive species, threat level and potential impacts, and available treatments. FSM 2900, Invasive Species Management

Rehabilitation: Reparation of ecosystem processes, productivity and services based on functioning pre-existing or existing ecosystems, but allowing for adaptation of sites to specific current or future uses. FSM 2070, Vegetation Ecology

Restoration: Assisting the recovery of an ecosystem that has been degraded, damaged or destroyed including the re-establishment of the pre-existing biotic integrity in terms of species composition and community structure. FSM 2070, Vegetation Ecology

Revegetation: Re-establishment of plants on a site. FSM 2070, Vegetation Ecology

Survey: An invasive species survey is a process of systematically searching a geographic area for a particular (targeted) invasive species, or a group of invasive species, to determine if the species exists in that area. It is important to know where and when surveys have occurred, even if the object of the survey (target species) was not located. Information on the absence of an invasive species can be as valuable as information on the presence of the species, and can be used as a foundation to an early detection system. FSM 2900, Invasive Species Management

Treatment: Any activity or action taken to directly prevent, control, or eradicate a targeted invasive species. Treatment of an invasive species infestation may not necessarily result in the elimination of the infestation, and multiple treatments on the same site or population are sometimes required to affect a change in the status of the infestation. Treatment activities typically fall within any of the four general categories of integrated management techniques: Biological treatments, Cultural treatments, Mechanical treatments, or Chemical treatments. For example, the use of domestic goats to control invasive plants would be considered a biological treatment; the use of a pesticide to control invasive fishes would be characterized as a chemical treatment; planting of native seeds used to prevent invasive species infestations and restore a degraded site would be considered a cultural treatment technique; developing an aquatic species barrier to prevent invasive species from spreading throughout a watershed would be considered a physical treatment; cleaning, scraping, or otherwise removing invasive species attached to equipment, structures, or vehicles would be considered a mechanical treatment designed to directly control and prevent the spread of those species. FSM 2900, Invasive Species Management.

Table E 3. Terrestrial Invasive Plant Species (Noxious Weed) of Management Concern on LTBMU – as updated (April 2015)

Common Name	Scientific Name	2015 LTBMU Priority	NDA	CDFA	Cal-IPC	LTB WCG
bull thistle	*Cirsium vulgare*	Low		C	Moderate	Group 2
Canada thistle	*Cirsium arvense*	High	C	B	Moderate	Group 1
cheat grass	*Bromus tectorum*	Low			High	
curlyleaf pondweed	*Potamogeton crispus*	N/A			Moderate	
Dalmatian toadflax	*Linaria genistifolia* spp. *dalmatica*	High	A	A	Moderate	Group 2
diffuse knapweed	*Centaurea diffusa*	High	B	A	Moderate	Group 1
Dyer's woad	*Isatis tinctoria*	High	A	B	Moderate	Group 1
Eurasian watermilfoil	*Myriophyllum spicatum*	N/A	A		High	
globe-podded hoary cress; hairy whitetop	*Cardaria pubescens*	Medium		B	Limited	Group 1
heart-podded hoary cress; whitetop	*Cardaria draba*	Medium	C	B	Moderate	Group 1
Himalaya blackberry	*Rubus armeniacus*	Medium			High	
hydrilla; waterthyme	*Hydrilla verticillata*	N/A	A	A	High; Alert	
medusahead	*Elymus caput-medusae*	High	B	C	High	Group 1
musk thistle	*Carduus nutans*	High	B	A	Moderate	Group 1
oxeye daisy	*Leucanthemum vulgare*	Low			Moderate	Group 2
poison hemlock	*Conium maculatum*	Low	C		Moderate	

Common Name	Scientific Name	2015 LTBMU Priority	NDA	CDFA	Cal-IPC	LTB WCG
purple loosestrife	*Lythrum salicaria*	High	A	B	High	Group 1
purple starthistle; red starthistle	*Centaurea calcitrapa*	Medium	A	B	Moderate	Group 1
quackgrass	*Elytrigia repense*	Low		B		
rush skeletonweed	*Chondrilla juncea*	High	A	A	Moderate	Group 1
Russian knapweed	*Acroptilon repens*	Medium	B	B	Moderate	Group 1
Scotch broom	*Cytisus scoparius*	Medium		C	High	Group 2
Scotch thistle	*Onorpordum acanthium* ssp. *acanthium*	High	B	A	High	Group 1
spotted knapweed	*Centaurea maculosa*	High	A	A	High	Group 2
squarrose knapweed	*Centaurea virgata* ssp. *squarrosa*	High	A	A	Moderate	
St. Johnswort; Klamathweed	*Hypericum perforatum*	Medium	A	C	Moderate	Group 2
stinkwort	*Dittrichia graveolens*	Low			Moderate	Group 1
sulfur cinquefoil	*Potentilla recta*	Medium	A	A		Group 1
tall whitetop; perennial pepperweed	*Lepidium latifolium*	High	C	B	High	Group 2
tamarisk; saltcedar	*Tamarix chinensis, T. ramosissima, & T. parvifolia*	High	C	B	High	Group 1

Common Name	Scientific Name	2015 LTBMU Priority	NDA	CDFA	Cal-IPC	LTB WCG
teasel; Fuller's teasel	*Dipsacus fullonum*	Low			Moderate	Group 1
tree of heaven	*Ailanthus altissima*	High		C	Moderate	Group 1
woolly mullein; common mullein	*Verbascum thapsus*	N/A			Limited	
yellow starthistle	*Centaurea solstitialis*	Medium	A	C	High	Group 1
yellow toadflax; butter & eggs	*Linaria vulgaris*	High	A		Moderate	Group 2

LTBMU: High—Species that have a large ecological impact or invasive potential; species that are easily controlled. Medium—Species that have a moderate ecological impact or invasive potential; species that may be difficult to control. Low—Species that have a low ecological impact or invasive potential; species that require substantial effort to control. N/A—species not evaluated.

NDA: Nevada Department of Agriculture Noxious Weed List (http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm) Category A—Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations. Category B—Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur. Category C—Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer.

CDFA: California Department of Food and Agriculture Noxious Weed List (http://www.cdfa.ca.gov/phpps/ipc/). A--Eradication or containment is required at the state or county level. B—Eradication or containment is at the discretion of the County Agricultural Commissioner. C--Require eradication or containment only when found in a nursery or at the discretion of the County Agricultural Commissioner. Q—Require temporary "A" action pending determination of a permanent rating.

Cal-IPC: California Invasive Plant Council Online Invasive Plant Inventory (2006) (http://www.cal-ipc.org/ip/inventory/weedlist.php). High—Species having severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Moderate—Species having substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Limited—Species that are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Alert—Species with significant potential for invading new ecosystems.

LTBWCG: Lake Tahoe Basin Weed Coordinating Group Weed Priority List (2010). Group 1--Watch for, report, and eradicate immediately. Group 2--Manage infestations with the goal of eradication.

E.2.4.2. Aquatic Invasive Species

The Lake Tahoe Region AIS Program is governed by existing Federal, State and local laws. Those relevant to water quality and/or to aquatic invasive species include but are not limited to:

Federal

- Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA) of 1990, 16 USC 4721
- Endangered Species Act (ESA) of 1973
- Lacey Act of 1990 as amended in 1998
- National Environmental Policy Act of 1970
- National Invasive Species Act of 1996 (NISA)
- Clean Water Act of 1972
- Safe Drinking Water Act of 1974

State

- California-Nevada Compact for Jurisdiction on Interstate Waters
- California Environmental Quality Act (CEQA)
- California Fish and Game Code 2301
- Nevada Revised Statutes (NRS 503.597; NRS 488)

Regional

- Tahoe Regional Planning Compact (Public Law 96-551)
- Tahoe Regional Planning Agency Code of Ordinances (Chapter 79.3)

Further information on authorities and the parameters and abilities of the Lake Tahoe Region AIS program is provided in the *Lake Tahoe Region Aquatic Invasive Species Management Plan* which is available at:

http://www.trpa.org/programs/invasive-species/

AIS program in the Lake Tahoe Basin, including the LTBMU, is managed by the AIS Coordinating Committee. Members include representatives from the following government agencies and entities:

Federal

- USDOI, US Fish and Wildlife Service
- USDA, Agricultural Research Service
- USDA, US Forest Service, Lake Tahoe Basin Management Unit

State

- California Department of Fish & Game
- California Department of Parks and Recreation
- California Regional Water Quality Control Board (Lahontan)
- California State Lands Commission
- California Tahoe Conservancy

- Nevada Department of Conservation and Natural Resources
- Nevada Department of Wildlife

Regional

- Tahoe Regional Planning Agency
- Tahoe Resource Conservation District
- Tahoe Science Consortium (ex-officio)

The information for aquatic invasive species are continually updated and modified annually as new invasive species are identified, new sites are identified, and as management actions eradicate invasive. The list of aquatic invasive species presented in this section are the current aquatic invasive species that are considered of concern for the LTBMU.

Table E 4. Aquatic Invasive Species List

Group	Common	Scientific
Aquatic	**Corbicula (Asian Clam)**	*Corbicula fluminea*
	Zebra Mussel	*Dreissena polymorpha*
	Quagga Mussel	*Dreissena rostriformis bugensis*
	New Zealand Mudsnail	*Potamopyrgus antipodarum*
	Bullhead Catfish	*Ameiurus spp.*
	Bluegill	*Lepomis macrochirus*
	Largemouth Bass	*Micropterus salmoides*
	Crappie	*Pomoxis spp.*
	Bullfrog	*Rana catesbeiana*

E.2.5. Species Specific Limited Operating Periods

This section notes the current expected limited operating periods for specific species as required in SG44. Limited operating periods, may change or be added over the life of the Plan based on species status including new species detection and/or species removals/additions to TECPS lists.

E.2.5.1. Sierra Nevada yellow-legged frog

Maintain a Sierra Nevada yellow-legged frog (*Rana sierra;* SNYLF) LOP April 15 through August 15 and prohibit habitat manipulation or other activity that could create bank disturbance within occupied habitats unless concurrence or an opinion has been reached otherwise by the FWS through project or programmatic level of consultation through issued letter of concurrence or Biological Opinion indicates activity is acceptable.

E.2.5.2. Cliff Nesting Raptors

Do not construct roads and trails within ¼ mile of the top or base of known cliff nesting raptor sites. Prohibit activities such as rock climbing that may disrupt breeding during the raptor nesting season (April 1-July 31). Determine the distance to prohibit activities from an occupied nest based on nest location, nesting pair behavior, and cliff features that either expose or visually/audibly protect the nest from disturbance.

E.2.5.3. Marten

Protect marten den site buffers from disturbance from vegetation treatments with a limited operating period (LOP) from May 1 through July 31 as long as habitat remains suitable or until another Regionally-approved management strategy is implemented.
Marten Waiver - The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location.

E.2.5.4. Willow flycatcher

Maintain a willow flycatcher LOP during the breeding season for activities that are likely to disrupt breeding within ¼ mile of occupied nest sites or habitat during the period of June 1 through August 31 (including no timber thinning, prescribed fire, restoration activities, grazing, utilities work, road or trail building).

E.2.5.5. Townsend's big-eared Bat

Maintain a Townsend's big-eared bat LOP May 1 through August 31 within a minimum of 300 feet of roost sites. Prohibit habitat manipulation or other activity that could create a noise disturbance unless surveys confirm that bats are not present; Prohibit burning near a roost site unless surveys confirm bats are not present or smoke will not enter the roost. Exceptions may be permitted when surveys confirm bats are not present.

E.2.5.6. California Spotted Owl and Northern Goshawk - Breeding

Maintain a California spotted owl and /or northern goshawk LOP during the breeding season (March 1 through August 15 for California spotted owls and February 15 through September 15 for Northern Goshawk) for vegetation treatments that may disrupt breeding within a minimum of ¼ mile of the nest site or activity center, unless surveys confirm that spotted owls and northern goshawks are not nesting. Prior to implementing activities within or adjacent to a California spotted owl PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location prior to implementing activities. For northern goshawks, if the nest stand within a PAC is unknown, either apply the LOP to a ¼-mile area surrounding the PAC, or survey to determine the nest stand location.

E.2.5.7. California Spotted Owl and Northern Goshawk – Vegetation Treatments Waiver

The spotted owl and/or northern goshawk LOP may be waived for vegetation treatments when a biological review determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location. The LOP buffer distance may

be modified when a biological review concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance.

- **For California spotted owl PACs:** Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the acres in California spotted owl PACs in the 11 Sierra Nevada national forests. Monitor the number of PACs treated at a bioregional scale.
- **For northern goshawk PACs:** Conduct mechanical treatments in no more than 5 percent per year and 10 percent per decade of the acres in northern goshawk PACs in the 11 Sierra Nevada national forests.

E.2.5.8. California Spotted Owl and Northern Goshawk – Prescribed Fire Waiver

Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of California spotted owl and/or northern goshawk PACs per year on the Unit.

E.2.6. Full List of Species Considered for the FEIS

The table presented in this section displays the full list of FWS, LTBMU Sensitive, and other species considered for inclusion in the Final LRMP and EIS. For species selected as "secure" - those species are noted as having "general species and habitat management guidance" and have been addressed in general biological program desired condition and strategies . For species considered as "not secure" - those species are noted as having "species specific management direction guidance" that are in addition to the general species and habitat guidance found in the LRMP such as specific desired conditions, objectives, S&G, and or LOPs.

Species Considered - "N/A" indicates that a species was considered, but not included in the Draft EIS for analysis based on what is described in the "comments / rationale" column.

Status Definitions (NatureServe Rankings) - : G = Global Conservation Status - full species, range-wide; T = Global Conservation Status - subspecies, varieties, and population range-wide; N = National Conservation Status; S = State / Province Status; 1 = Critically Imperiled; 2 = Imperiled; 3 = Vulnerable; 4 = Apparently Secure; 5 = Secure.

Detailed information for all species can be found at: **http://www.natureserve.org/explorer/index.htm**. Just enter the species common or scientific name in the species quick search box and follow the on-line instructions. In cases where additional reference information was needed (beyond Nature Serve) to determine if the species would be carried forward for further consideration, the reference link is added into the "comments / rationale" column of the species table.

Table E 5. Complete List of Species Considered within the LTBMU FEIS.

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Amphibians	**California Red-legged Frog**	*Rana draytonii*	G2G3 Federally Threatened	riparian, ponds	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed; also not on FWS list
Amphibians	**Foothill Yellow-legged Frog**	*Rana boylii*	G3	Rivers, Riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Amphibians	**Mount Lyell Salamander**	*Hydromantes platycephalus*	G3 S3 (CA)	riparian, logs, woody debris	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Amphibians	**Northern Leopard Frog**	*Rana pipiens*	G5, S2 (CA) S2S3 (NV), FSS	rivers, wetlands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Amphibians	**Pacific tree frog**	*Pseudacris regilla*	MIS	Wet meadow (WTM), freshwater emergent wetland (FEW)	YES General Desired Conditions & Strategies – Biological Resource Program	SECURE MIS
Amphibians	**Sierra Nevada Yellow-legged Frog**	*Rana sierrae*	G1 Federally Endangered, FSS	small lakes and wetlands	Yes DC 78 Strategies – Biological Resource Program Objectives 28-30 S&Gs 93, 94 LOP App. E.2.5	NOT SECURE Species Specific Management
Amphibians	**Western Spadefoot**	*Spea hammondii*	G3, S3	intermittent pools, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Amphibians	**Western Toad**	*Bufo boreas*	G4, S5 (CA) S4 (NV)	meadow, riparian	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	SECURE Aquatic Ecosystem Management
Amphibians	**Yosemite Toad**	*Bufo canorus*	G2 Federally Proposed Endangered	meadow, riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Arachnids	**A Cave Obligate Harvestman**	*Banksula galilei*	G1	only found in caves in Placer County	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Birds	**American Avocet**	*Recurvirostra americana*	G5, SNRB,SNRN (CA) S4B (NV), GB	riparian, marshes	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**American Golden Plover**	*Pluvialis dominica*	G5, SNA (CA) SNA (NV), GB	riparian, grasslands, sand dunes	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**American White Pelican**	*Pelecanus erythrorhynchos*	G3 S1 (CA), S2B NV	riparian	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to occasional occurrence within the LTBMU
Birds	**Bald Eagle**	*Haliaeetus leucocephalus*	G5, SE FP CDF:S S2 (CA) S1B,S3N (NV), TRPA-SI; FSS	Snags, Cliffs, Riparian, General Forest	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE General Habitat Management
Birds	**Bank Swallow**	*Riparia riparia*	G5, ST S2S3 (CA) S3B (NV)	riparian, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Black-backed Woodpecker**	*Picoides arcticus*	G5, S3 (CA) S1 (NV) , MIS	snags,burned conifer forests	Yes DC 69 General Desired Conditions & Strategies – Biological Resource Program S&G 60, 61, 62	MIS General Forest Management
Birds	**Black Rail**	*Laterallus jamaicensis coturniculus*	G4, S1 (CA)	wetlands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Black Swift**	*Cypseloides niger*	G4 S2 (CA) GB, SN	Aerial, Bare rock/talus/scree, Cliff	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**Brewer's Sparrow**	*Spizella breweri*	G5, S3 (CA) S4B (NV) GB	desert, shrublands	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
						components - due to rare occurrence within the LTBMU
Birds	**Burrowing Owl**	*Athene cunicularia*	G4, SSC S2 (CA), S3B (NV) GB	Grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**California Black Rail**	*Laterallus jamaicensis coturniculus*	G4T1, ST FP, S1 (CA)	wetlands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**California Spotted Owl**	*Strix occidentalis occidentalis*	G3T3, SSC S3 (CA), S1N (NV) GB, SN, FSS, TRPA-SI; MIS	snags, general forest	Yes DCs 73-76 Strategies – Biological Resource Program S&Gs 90-99 LOPs App. E.2.5	NOT SECURE Species Specific Management
Birds	**Cooper's Hawk**	*Accipiter cooperii*	G5 S3	riparian, general forest	N/A	uncommon in LTBMU
Birds	**Ferruginous Hawk**	*Buteo regalis*	G4, S3S4 (CA) S2 (NV) GB	Desert, grassland, riparian, cliffs	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to accidental occurrence within the LTBMU
Birds	**Flammulated Owl**	*Otus flammeolus*	G4, S2S4 GB, SN	snags, general forest	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE General Forest Management
Birds	**Golden Eagle**	*Aquila chrysaetos*	G5, FP, TRPA-SI CDF:S, S3 (CA) , S4 (NV)	Alpine, Cliffs	Yes DC 65 Strategies – Biological Resource Program Objective 19 S&G 67,68	SECURE Cliffs, Caves, and Cave Surrogates Management
Birds	**Grasshopper Sparrow**	*Ammodramus savannarum*	G5, S2 (CA, SU (NV)	grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Gray Vireo**	*Vireo vicinior*	G4 S2 (CA), S3B (NV) GB	riparian, general forest	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Great Blue Heron**	*Ardea herodias*	G5, S4 (CA) S5 (NV)	Riparian	N/A	local population considered secure
Birds	**Great Egret**	*Ardea alba*	G5, S4 (CA) S4B (NV)	Riparian	N/A	local population considered secure

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Birds	**Great Gray Owl**	*Strix nebulosa*	G5, SE CDF:S, S1 (CA), FSS	riparian, general forest	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE species occurs outside the LTBMU - Lake Tahoe watershed – habitat management
Birds	**Greater Sage Grouse**	*Centrocercus urophasianus*	GB, S3 (CA) S3S4 (NV)	desert, grassland, shrubs	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Hairy Woodpecker**	*Picoides villosus*	MIS	Medium and large snags in green forest	YES General Desired Conditions & Strategies – Biological Resource Program	SECURE MIS
Birds	**Harlequin Duck**	*Histrionicus histrionicus*	G4, S2 (CA)	Rivers, Riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Lewis's Woodpecker**	*Melanerpes lewis*	G4, SNR (CA) S3 (NV) GB, SN	riparian, general forest	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to occasional occurrence within the LTBMU
Birds	**Loggerhead Shrike**	*Lanius ludovicianus*	G4 S4 (CA) , S4 (NV) GB	grasslands	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**Long-billed Curlew**	*Numenius americanus*	G5, S2 (CA) S2S3B (NV)GB	grassland, riparian	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**Marbled Godwit**	*Limosa fedoa*	SNRN (CA) S3M (NV) GB	grasslands, sand dunes	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**Mountain Plover**	*Charadrius montanus*	G2	desert, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Birds	**Mountain Quail**	*Oreortyx pictus*	MIS	Ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree sizes 1, 2, 3, and 4 all canopy closures	YES General Desired Conditions & Strategies – Biological Resource Program	MIS
Birds	**Northern Goshawk**	*Accipiter gentilis*	G5, S2S3, FSS, CDF:S, TRPA-SI;	riparian, general forest, late seral closed canopy	Yes DCs 73, 74, 76 Strategies – Biological Resource Program S&Gs 91, 93-99 LOP App. E.2.5	NOT SECURE Species Specific Management
Birds	**Olive-sided Flycatcher**	*Contopus cooperi*	G4 S4 (CA) S2B (NV) SN	Riparian, Wetlands, General Forest	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE General Forest Management
Birds	**Osprey**	*Pandion haliaetus*	G5, CDF:S S3 (CA) S1B, S3M (NV), TRPA-SI	Snags, Cliffs, Riparian, Shorelines	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42,43, 45-49, 55-58, 67	SECURE Aquatic Ecosystem Management; General Forest Management
Birds	**Peregrine falcon**	*Falco peregrinus*	G4, SCD FP S2B,SNRN (CA) S2 (NV) GB, SN, TRPA-SI	Aerial, Cliffs, General Forest	Yes DC 65 Strategies – Biological Resource Program Objective 19 S&G 65	SECURE Cliffs, Caves, and Cave Surrogates Management
Birds	**Prairie Falcon**	*Falco mexicanus*	S3 (CA) S4 (NV) GB	Alpine, Cliffs	Yes DC 65 Strategies – Biological Resource Program Objective 19 S&G 67 -68	SECURE Cliffs, Caves, and Cave Surrogates Management
Birds	**Rufous Hummingbird**	*Selasphorus rufus*	G5, S1S2 (CA) S3M (NV), SN	riparian, alpine, conifer forest	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program	SECURE Aquatic Ecosystem Management

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
					Objectives 15-18, 20-22 S &Gs 42, 43, 45-49, 55-58, 67	
Birds	**Sage Sparrow**	*Amphispiza belli*	G5, SNRB,SNRN (CA) S4B,S4N (NV), GB	desert, shrubland	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Sanderling**	*Calidris alba*	G5, SNRN (CA) SNA (NV), GB	Riparian, sand dunes	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to accidental occurrence within the LTBMU
Birds	**Sharp-shinned Hawk**	*Accipiter striatus*	G5 S3	riparian, general forest	N/A	uncommon in LTBMU
Birds	**Solitary Sandpiper**	*Tringa solitaria*	G5, SNA (CA) S4N (NV), GB	wetlands, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Souty (Blue) Grouse**	*Dendragapus obscurus*	MIS	Ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 5, canopy closures S and P	YES General Desired Conditions & Strategies – Biological Resource Program	MIS
Birds	**Swainson's Hawk**	*Buteo swainsoni*	G5, S2 (CA) S2B (NV) GB, ST	Desert, grassland, riparian, woodlands	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to accidental occurrence within the LTBMU
Birds	**Tricolored Blackbird**	*Agelaius tricolor*	G2G3, S1(NV) S2 (CA), GB, SN	grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Virginia's warbler**	*Vermivora virginiae*	S2S3 (CA) S4B (NV), GB	riparian, general forest	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Western Snowy Plover**	*Charadrius alexandrinus nivosus*	G4,T3, SSC S2 (CA)	Riparian, sand dunes	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
			S3B (NV) GB			
Birds	**Western Yellow-billed Cuckoo**	*Coccyzus americanus occidentalis*	G5T3Q Threatened, SE S! (CA) S1B (NV)	Riparian, Wetlands, General Forest	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Whimbrel**	*Numenius phaeopus*	G5, SNRN (CA) SNA (NV), GB	grassland, riparian	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to accidental occurrence within the LTBMU
Birds	**White-Faced Ibis**	*Pegadis chihi*	G5, S1 (CA) S3B (NV)	riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**White-headed Woodpecker**	*Picoides albolarvatus*	G4, SNR (CA) S2 (NV), GB, SN	snags, conifer forests	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE General Forest Management
Birds	**White-tailed Kite**	*Elanus leucurus*	G5, FP S3 (CA)	croplands, riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Willow Flycatcher**	*Empidonax traillii adastus*	G5T5, SE S1S2, S3B (NV), FSS	wet meadow	Yes DCs 46-49 Strategies – Biological Resource Program Objective 20 S&G 142 LOP App. E.2.5	NOT SECURE Species Specific Management
Birds	**Williamson's Sapsucker**	*Sphyrapicus thyroideus*	G5, S3 (CA) S2 (NV) GB, SN	snags, general forest	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE General Forest Management
Birds	**Wilson's Phalarope**	*Phalaropus tricolor*	G5, SNRB,SNRN (CA) S2S3B,S4M (NV) GB	grassland, riparian	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**Yellow-billed Cuckoo**	*Coccyzus americanus*	G5,SNRB (CA) S1B (NV)	Riparian, General Forest	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Birds	**Yellow-headed Blackbird**	*Xanthocephalus xanthocephalus*	G5, SSC S3S4 (CA), S4B (NV)	wetlands, grasslands	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to occasional occurrence within the LTBMU
Birds	**Yellow Rail**	*Coturnicops noveboracensis*	G4, SSC S1S2 (CA) GB	riparian, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Yellow Warbler**	*Dendroica petechia brewsteri*	G5T3?, SSC S2 (CA) , MIS	riparian	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	MIS Aquatic Ecosystem Management
Crustaceans	**California Fairy Shrimp**	*Linderiella occidentalis*	G3G4	vernal pools	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed
Crustaceans	**Vernal Pool Fairy Shrimp**	*Branchinecta lynchi*	G3 Federally Threatened	vernal pools	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed; also not on FWS list
Crustaceans	**Vernal Pool Tadpole Shrimp**	*Lepidurus packardi*	G4 Federally Endangered	vernal pools	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed
Fish	**Wall Canyon Sucker**	*Catastomus sp. 1*	G1	lakes and streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Warner Sucker**	*Catastomus warnerensis*	G1 Federally Threatened	lakes and streams	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed; also not on FWS list
Fish	**Mountain Sucker**	*Catostomus platyrhynchus*	G5, S2S3	streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Tahoe Sucker**	*Catostomus tahoensis*	G5	streams	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	SECURE Aquatic Ecosystem Management, concern for local population
Fish	**Cui-ui**	*Chasmistes cujus*	G1 Federally Endanger	streams	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed; also

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
			ed			not on FWS list
Fish	**Piute Sculpin**	*Cottus beldingi*	G5, S4	streams	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	SECURE Aquatic Ecosystem Management, concern for local population
Fish	**Sheldon Tui Chub**	*Gila bicolor eurysoma*	G4T1	streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Lahontan Lake Tui Chub**	*Gila bicolor pectinifer*	G4T3, S1S2, FSS	large lakes, lakezone	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Aquatic Ecosystem Management,
Fish	**High Rock Spring Tui Chub**	*Gila bicolor ssp. 11*	G4TX	streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Cowhead Lake Tui Chub**	*Gila bicolor vaccaceps*	G4T1	Cowhead slough	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Delta smelt**	*Hypomesus transpacificus*	G1, S1, Federally threatened	California delta	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Lahontan Cutthroat Trout**	*Oncorhynchus clarkii henshawi*	G4T3 Federally Threatened	large lakes and streams	Yes DC 75 Strategies – Biological Resource Program Objectives 24-27 S&Gs 100, 102	NOT SECURE Species Specific Management
Fish	**Paiute Cutthroat Trout**	*Oncorhynchus clarkii seleniris*	G4T1T2	large lakes and streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Rainbow Trout**	*Oncorhynchus mykiss*	G5	lakes and streams	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	SECURE Recreational fisheries, Aquatic Ecosystem Management
Fish	**Central Valley steelhead**	*Oncorhynchus mykiss pop. 11*	G5T2Q, Federally Threatened	lakes and streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Fish	**Redband Trout - Warner Valley**	*Oncorhynchus mykiss pop. 4*	G5T2Q	lakes and streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Kokanee Salmon**	*Oncorhynchus nerka*	G5	lakes and streams	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	SECURE Recreational fisheries, Aquatic Ecosystem Management
Fish	**Mountain Whitefish**	*Prosopium williamsoni*	G5, SNR (NV)	lakes and streams	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	SECURE Aquatic Ecosystem Management; concern for local population
Fish	**Lahontan Redside Shiner**	*Richardsonius egregius*	G5	rivers, lakezone	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	SECURE Aquatic Ecosystem Management; concern for local population
Fish	**Brown Trout**	*Salmo trutta*	G5	lakes and streams	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	SECURE Recreational fisheries, Aquatic Ecosystem Management
Fish	**Brook Trout**	*Salvelinus fontinalis*	G5	lakes and streams	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	SECURE Recreational fisheries, Aquatic Ecosystem Management

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Fish	**Lake Trout**	*Salvelinus namaycush*	G5	lakes	Yes DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	SECURE Recreational fisheries, Aquatic Ecosystem Management
Insects	**A Vernal Pool Andrenid Bee**	*Andrena blennospermatis*	G2	vernal pools	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed
Insects	**An Andrenid Bee**	*Andrena subapasta*	G1G3	grassland forbs	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed - reference link: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects_-_Hymenoptera/Andrena_subapasta.pdf
Insects	**Tahoe Benthic Stonefly**	*Capnia lacustra*	G1	deep water habitats (> 100feet) of Lake Tahoe	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components
Insects	**Carson Valley Wood Nymph**	*Cercyonis pegala carsonensis*	G5T2 S1S2 (CA) / S2 (NV)	Great Basin valleys on Nevada	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed - reference link: http://www.flmnh.ufl.edu/butterflies/research/allyn_pdfs/AME135small.pdf
Insects	**Cosumnes Stripetail**	*Cosumnoperla hypocrena*	G1	intermittent streams of the American and Cosumnes Rivers	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed
Insects	**Kings Canyon Cryptochian Caddisfly**	*Cryptochia excella*	G1G2	benthic, springs & brooks in specific locations in CA / NV	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed - reference link: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects_-_Trichoptera/Cryptochia_excella.pdf
Insects	**A Longhorned Beetle**	*Desmocerus californicus*	G3	riparian forests of the Central Valley of CA	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Insects	**Valley Elderberry Longhorn Beetle**	*Desmocerus californicus dimorphus*	G3T2 Federally Threatened	riparian forests of the Central Valley of CA	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed - also not on LTBMU FWS list - reference link: http://essig.berkeley.edu/endins/desmocer.htm
Insects	**Amphibious Caddisfly**	*Desmona bethula*	G2	high elevation, first order streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Insects	**Dotted Blue**	*Euphilotes enoptes aridorum*	G5T1	urban areas	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Insects	**Mono Lake Checkerspot**	*Euphydryas editha monoensis*	G5T2T3	Grasslands, herbaceous, Woodland, Conifer	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Insects	**A Montane Ant (Northern Sierra Endemic Ant)**	*Formica microphthalma*	G2?	Conifer Forests	N/A	not confirmed to be on LTBMU; not considered in detail since they will not be affected by LTBMU management or potential plan components
Insects	**Ricksecker's Water Scavenger Beetle**	*Hydrochara ricksecker*i	G1G2	Shallow water, creeks, springs, brooks	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Insects	**Nevada Viceroy**	*Limenitis archippus lahontani*	G5T1T2	riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Insects	**Sierra Needlefly**	*Megaleuctra sierra*	G2Q	benthic, springs & brook	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Insects	**Dune Honey Ant**	*Myrmecocystus snellingi (=arenarius)*	G2?	Sand dunes	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Insects	**South Forks Ground Beetle**	*Nebria darlingtoni*	G1	oak woodlands, South Fork American River	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.dot.ca.gov/dist3/projects/shingle/pdfs/vol1/5-07-Biological-Resources.pdf
Insects	**Gold Rush Hanging Fly**	*Orobittacus obscurus*	S1 (CA)	Western slopes of Sierra Nevada, forest to aok woodlands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects_-_Misc/Orobittacus_obscurus.pdf

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Insects	**An Aquatic Moth**	*Petrophila confusalis*	S1 (NV)	unknown	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Insects	**Alkaline Sandhill Skipper**	*Polites sabuleti alkaliensis*	G5T3T4	alkaline lakes	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.flmnh.ufl.edu/butterflies/research/allyn_pdfs/AME109small.pdf
Insects	**Carson Valley Sandhill Skipper**	*Polites sabuleti genoa*	G5T3T4	Carson River Valley	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.flmnh.ufl.edu/butterflies/research/allyn_pdfs/AME109small.pdf
Insects	**Alkali Skipper**	*Pseudocopaeodes eunus*	G3	Riparian, Alkali flats in arid areas	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.nearctica.com/butter/plate27/Peunus.htm
Insects	**Carson Wandering Skipper**	*Pseudocopaeodes eunus obscurus*	G3G4T1 Federally Endangered	grassland	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - also not on FWS list - reference link: http://xerces.org/wp-content/uploads/2008/09/pseudocopaeodes_eunus_obscurus.pdf
Insects	**Spiny Rhyacophilan Caddisfly**	*Rhyacophila spinata*	G1G2	benthic, creeks, rivers	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Insects	**Nokomis Fritillary**	*Speyeria nokomis*	G3	wet places in arid areas	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Insects	**Apache Fritillary**	*Speyeria nokomis apacheana*	G3T2	unknown	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Insects	**Carson Valley Silverspot**	*Speyeria nokomis carsonensis*	G3T1	Carson River Valley	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.nature.org/wherewework/northamerica/states/nevada/science/art11296.html
Insects	**Western bumble bee**	*Bombus occidentalis*	FSS	Varied	Yes General Desired Conditions & Strategies –	SECURE General Forest management – this species was added to

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
					Biological Resource Program	the LTBMU FSS list as of June 30, 2013.
Insects	**An Endemic Ant**	*Stenamma wheelerorum*	G1?	Conifer Forests	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mammals	**Pallid Bat**	*Antrozous pallidus*	G5, S3 (CA) S3 (NV) S1 (NV)	Graslands, deserts, woodlands, confir forests	N/A	species considered secure locally
Mammals	**Sierra Nevada Mountain Beaver**	*Aplodontia rufa californica*	G5T3T4	riparian, conifer forests	Yes	SECURE
Mammals	**(Mono Basin Mountain Beaver, Nevad Natural Heritage Program)**		NV State-Protected Species S2S3 (CA) S1 (NV)		- DCs 50, 51, 53-55, 57, 61-63, 66 Strategies – Biological Resource Program Objectives 15-18, 20-22 S&Gs 42, 43, 45-49, 55-58, 67	Aquatic Ecosystem Management; General Management
Mammals	**American Beaver**	*Castor canadensis*	G5	riparian	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components
Mammals	**Townsend's Big-eared Bat**	*Corynorhinus townsendii*	G4 S2S3 (CA) S2 (NV), FSS	cliffs, conifer forests, deserts, prairies, riparian, caves, mines, cave surrogates	Yes DC 65 Strategies – Biological Resource Program Objective 19 S&G 61	SECURE Cliffs, Caves, and Cave Surrogates Management
Mammals	**Big Brown Bat**	*Eptesicus fuscus*	G5, S5 (CA) S4 (NV)	conifer forests, urban environments	N/A	Species considered secure
Mammals	**Spotted Bat**	*Euderma maculatum*	G4 S2S3 (CA) , S2 (NV)	deserts, forests, prominnent rock features	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mammals	**Northern Flying Squirrel**	*Glaucomys sabrinus*	G5, S5 (CA) S2S3 (CA) , S2 (NV) S3 (NV), MIS	snags, general forest	YES General Desired Conditions & Strategies – Biological Resource Program	SECURE MIS

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Mammals	**Wolverine**	*Gulo gulo*	G4, ST FP, S2 (CA) , SH (NV), FSS	alpine, conifer forests	Yes for subspecies only: General Desired Conditions & Strategies – Biological Resource Program	SECURE Potential for subspecies(Gulo Gulo luteus)) to occur in Plan area during the life of the Plan
Mammals	**Silver-haired Bat**	*Lasionycteris noctivagans*	G5, S3S4 (CA) S3 (NV)	general forest	N/A	Species considered secure
Mammals	**Western Red Bat**	*Lasiurus blossevillii*	S3? CA) S1 (NV)	riparian, general forest	N/A	Low probability to be found in the Plan area – not expected that management will affect species
Mammals	**Hoary Bat**	*Lasiurus cinereus*	G5	general forest	N/A	Species considered secure
Mammals	**Sierra Nevada Snowshoe Hare**	*Lepus americanus tahoensis*	G5T3T4Q	general forest	N/A	SECURE General Forest Management - reference link: http://wildlife1.wildlifeinformation.org/S/0MLagomorph/Leporidae/lepus/Lepus_americanus.html
Mammals	**American Marten**	*Martes americana*	G5, S3S4 (CA) S2S3 (NV), FSS; MIS	snags, woody debris, general forest	Yes DC 68 General Desired Conditions & Strategies – Biological Resource Program S&G 70-72	SECURE General Forest Management; MIS
Mammals	**Fisher - West Coast Distinct Population Segment**	*Martes pennanti pop. 1*	G5T2T3Q Candidate Species, SSC S2S3 (CA)	snags, woody debris, general forest, riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mammals	**California myotis**	*Myotis californicus*	G5, S5 (CA) S4 (NV)	cliffs, general forest, riparian,	N/A	Species considered secure
Mammals	**Western Small-footed Myotis**	*Myotis ciliolabrum*	G5, S2S3 (CA) S3 (NV)	cliffs, general forest, riparian, snags	Yes DC 65 Strategies – Biological Resource Program Objective 19 S&G 65	SECURE Cliffs, Caves, and Cave Surrogates Management
Mammals	**Long-eared Myotis**	*Myotis evotis*	G5, S4? (CA) S4 (NV)	cliffs, general forest, riparian,	N/A	Species considered secure
Mammals	**Little Brown Myotis**	*Myotis lucifugus*	S2S3 (CA) S3 (NV)	general forest, riparian, caves,	N/A	Species considered secure

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
				buildings,		
Mammals	**Fringed-tailed Myotis**	*Myotis thysanodes*	G4G5, S4 (CA) S2 (NV), FSS	cliffs, general forest, riparian,	Yes DC 65 Strategies – Biological Resource Program Objective 19 S&G 65	SECURE Cliffs, Caves, and Cave Surrogates Management
Mammals	**Long-legged Myotis**	*Myotis volans*	G5	cliffs, caves, general forest,	N/A	Species considered secure
Mammals	**Yuma Myotis**	*Myotis yumanensis*	G5, S4 (CA)	cliffs, general forest, riparian,	N/A	Species considered secure
Mammals	**Lodgepole Chipmunk**	*Neotamias speciosus*	G4	cliffs, general forest, riparian,	N/A	Species considered secure
Mammals	**American Pika**	*Ochotona princeps*	G5, S3S4 (CA) S2 (NV)	alpine, rocky talus slopes	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components
Mammals	**Mule Deer**	*Odocoileus hemionus*	G5, TRPA-SI	general forest	Yes S2 (NV) General Desired Conditions & Strategies – Biological Resource Program	SECURE Species considered secure – habitat management
Mammals	**Western Pipistrelle**	*Pipistrellus hesperus*	G5	rocky canyons, deserts	N/A	Species considered secure
Mammals	**Preble's Shrew**	*Sorex preblei*	G4, SNR (CA) S1S2 (NV)	riparian, desert, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mammals	**Trowbridge's Shrew**	*Sorex trowbridgii*	G5, S4S5 (CA) S2 (NV)	general forest, riparian, woody debris	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE General Forest Management
Mammals	**Brazilian Free-tailed Bat**	*Tadarida brasiliensis*	G5	Uban environments, general forest, riparian,	N/A	Species considered secure
Mammals	**American Black Bear**	*Ursus americanus*	G5	general forest	N/A	Species considered secure

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Mammals	**Red Fox**	*Vulpes vulpes*	G5, S1 (CA), S2 (NV)	general forest	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - considered extremely rare or extinct on LTBMU
Mammals	**Sierra Nevada Red Fox**	*Vulpes vulpes necator*	G5T3, ST S1 (CA), S3 (NV),	general forest	No	SECURE considered extremely rare or extinct on LTBMU – habitat management – this species was removed from the FSS list as of June 30, 2013 and is not considered in detail the Final EIS or the Biological Evaulation
Mollusks	**Tight Coin (snail)**	*Ammonitella yatesii*	G1	terrestrial	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mollusks	**California Floater**	*Anodonta californiensis*	G3Q	Shallow water, creeks, springs, brooks	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.xerces.org/california-floater/
Mollusks	**Pyramid Lake Pebblesnail**	*Fluminicola dalli*	G1	Pyramid Lake	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mollusks	**Virginia Mountains Pebblesnail**	*Fluminicola virginius*	G1	Pyramid Lake	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mollusks	**Great Basin Rams-horn**	*Helisoma newberryi newberryi*	G1Q / FSS	Freshwater	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Habitat management though not considered in detail since they will not be affected by LTBMU management or potential plan components - due to burrowing in soft mud species maybe invisible even when abundant
Mollusks	**Smooth Juga**	*Juga interioris*	G1	Freshwater	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mollusks	**Oasis Juga**	*Juga laurae*	G1	Freshwater	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mollusks	**Western Pearshell**	*Margaritifera falcata*	G4G5 / SNR (CA / NV)	Rivers	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Mollusks	**Sierra Sideband (snail)**	*Monadenia mormonum*	G2	terrestrial	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mollusks	**Button's Sierra Sideband (snail)**	*Monadenia mormonum buttoni*	G2T1	terrestrial	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mollusks	**Fly Ranch Pyrg**	*Pyrgulopsis bruesi*	G1	thermal spring in Northwestern NV	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mollusks	**Western Lahontan Pyrg**	*Pyrgulopsis longiglans*	G2G3	Freshwater	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Mollusks	**Wong's Springsnail**	*Pyrgulopsis wongi*	G2	Freshwater	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Mountain Bentgrass**	*Agrostis humilis*	G4, S1.3 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Jepson's Onion**	*Allium jepsonii*	G1		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Bristly-leaf Rockcress**	*Arabis rectissima var simulans*	G4G5T1Q, S1(NV), LSI,	General forest	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Galena Creek Rockcress**	*Arabis rigidissima var. dermota*	G3T2Q, S1.2 (CA) S2 (NV), FSS	Rocky habitat, general forest, aspen	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Tiehm's Rockcress**	*Arabis tiehmii*	G2 S1(NV), FSS	rocky habitats	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Suspected to occur within the Lake Tahoe watershed
Plants	**Tulare Rockcress**	*Boechera tularensis*	FSS	East facing subalpine rocky areas	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE General Species habitat management; this species was newly listed as FSS for the LTBMU as of June 30, 2013
Plants	**Nissenan Manzanita**	*Arctostaphylos nisseniana*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Margaret's Rushy Milkvetch**	*Astragalus convallarius var. margaretiae*	G5T2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Plants	**Lemmon's Milkvetch**	*Astragalus lemmonii*	G3?		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Lavin's Egg Milkvetch**	*Astragalus oophorus var. lavinii*	G4T2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Lahontan Milkvetch**	*Astragalus porrectus*	G3?		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Pulsifer's Milkvetch**	*Astragalus pulsiferae*	G4, S2S3 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Pulsifer's Milkvetch**	*Astragalus pulsiferae var. coronensis*	G4T3, S3.2 (CA), S1 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Pulsifer's Milkvetch**	*Astragalus pulsiferae var. pulsiferae*	G4T2, S2.2 (CA), S1 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Tiehm's Milkvetch**	*Astragalus tiehmii*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Balsamroot**	*Balsamorhiza macrolepis*	G3G4		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**California Balsamroot**	*Balsamorhiza macrolepis var. macrolepis*	G3G4T2, S2.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**trianglelobe moonwort**	*Botrychium ascendens*	G2G3, S1.3? (CA) S1 (NV), FSS	Meadow, shrublands, seeps, fens, streams	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**scalloped moonwort**	*Botrychium crenulatum*	G3, S2.2 (CA) S1? (NV), FSS	Seeps, streams, wet roadside ditches and drainage ways	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**narrowleaf grapefern**	*Botrychium lineare*	G2?, S1.3(CA), FSS		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**common moonwort**	*Botrychium lunaria*	G5, S2 (CA), FSS	Meadows	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Suspected to occur within the Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Plants	**Mingan's Moonwort**	*Botrychium minganense*	G4, FSS		Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**mountain moonwort**	*Botrychium montanum*	G3, S1.1 (CA), FSS		Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Bolander's bruchia moss**	*Bruchia bolanderi*	G3, S2.2(CA), FSS		Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Pleasant Valley Mariposa Lily**	*Calochortus clavatus var. avius*	G4T3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Stebbin's Morning-glory**	*Calystegia stebbinsii*	G1, FE		N/A	species occurs outside the LTBMU - Lake Tahoe watershed - also not on FWS list for LTBMU
Plants	**Pine Creek Evening-primrose**	*Camissonia boothii ssp. Alyssoides*	G5T4		N/A	Species considered secure
Plants	**Nevada Evening-primrose**	*Camissonia nevadensis*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**claspbract sedge**	*Carex amplectens*	G2? CBR		N/A	Not recognized as a separate species at this time.
Plants	**Mud Sedge**	*Carex limosa*	G5, S2.2 (CA)	Fens, meadows	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed, semi common within the LTBMU
Plants	**Sheldon's Sedge**	*Carex sheldonii*	G4, S2.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Valley Sedge**	*Carex vallicola*	G5, S2.3 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Pine Hill Ceanothus**	*Ceanothus roderickii*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Alpine Pincushion**	*Chaenactis douglassi var. alpina*	G5T5		N/A	SECURE Known to occur within the Lake Tahoe watershed, but does not currently have a rare rank, will monitor

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Plants	**Red Hills Soaproot**	*Chlorogalum grandiflorum*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Oval-leaf Viburnum**	*Ciburnum ellipticum*	G5		N/A	Species considered secure
Plants	**Two-lobed Clarkia**	*Clarkia biloba ssp. barndegeeae*	G4G5T2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Alpine Springbeauty**	*Claytonia megarhiza*	G4G5, S2.3 (ca)	Rocky habitats	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Great Basin Springbeauty**	*Claytonia umbellata*	G5?		N/A	Species considered secure
Plants	**Hispid Bird's-beak**	*Cordylanthus mollis ssp. Hispidus*	G2T2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Subalpine Cryptantha**	*Cryptantha crymophila*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Alkali False Whitlow-grass**	*Cusickiella douglasii*	G4G5		N/A	Species considered secure
Plants	**Bodie Hills Cusickiella**	*Cusickiella quadricostata*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fungi	**branched collybia**	*Dendrocollybia racemosa*	G2G3, FSS	General Forest - older	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Historical record - known to occur within the Lake Tahoe watershed
Plants	**Doublet**	*Dimeresia howellii*	G4?		N/A	Species considered secure
Plants	**Dwaft Downingia**	*Downingia pusilla*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Lake Tahoe Draba**	*Draba asterophora var. asterophora*	G4T2, S1.2(CA), FSS	Rocky habitats – tallus, scree	Yes DC 64 Strategies – Biological Resource Program Objective 23	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Cup Lake Draba**	*Draba asterophora var. macrocarpa*	G4T1, S1.1(CA), FSS	Rocky habitats – tallus, scree	Yes General Desired Conditions & Strategies – Biological Resource Program Objective 23	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Carson Range Draba**	*Draba stenoloba var. ramosa*	G5T2T3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Plants	**Mineral King draba**	*Draba cruciata*	FSS	Subalpine gravelly or rocky slopes	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE General Species habitat management; this species was newly listed as FSS for the LTBMU as of June 30, 2013
Plants	**Yuba Pass willowherb**	*Epilobium howellii*	G2, S2.3 (CA), FSS	Meadow edges, seeps, streams	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Oregon Willowherb**	*Epilobium oreganum*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Marsh willowherb**	*Epilobium palustre*	G5, S1.3 (CA)	Fens, Meadow, seeps	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Historic - Known to occur within the Lake Tahoe watershed
Plants	**Nevada Fleabane**	*Erigeron eatonii var. nevadincola*	G5T4, S2.3(CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Starved Daisy**	*Erigeron miser*	G2, S2.3 (CA), FSS	Rocky habitats - cliffs	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Suspected to occur within the Lake Tahoe watershed
Plants	**Crosby's Buckwheat**	*Eriogonum crosbyae*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Lemmon's Buckwheat**	*Eriogonum lemmonii*	G3?		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Steamboat Buckwheat**	*Eriogonum ovalifolium var. williamsiae*	G5T1 Federally Endangered		N/A	species occurs outside the LTBMU - Lake Tahoe watershed - also not on FWS list for LTBMU
Plants	**Prostrate Buckwheat**	*Eriogonum prociduum*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Altered Andesite Buckwheat**	*Eriogonum robustum*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Donner Pass Wild Buckwheat**	*Eriogonum umbellatum var. torreyanum*	G5T2, FSS	Ridge tops, steep slopes, dry	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Suspected to occur within the Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Plants	**Goldencarper buckwheat**	*Erigonum luteolum var. saltuarium*	FSS	Sandy granitic flats and slopes	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE General Species habitat management
Plants	**Pine Hill Flannelbush**	*Fremontodendron decumbens*	G1		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Butte County Fritillary**	*Fritillaria eastwoodiae*	G3Q		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**El Dorado Bedstraw**	*Galium californicum ssp. Sierrae*	G5T1		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Nevada Greasebush**	*Glossopetalon spinescens var. aridum*	G5T5?		N/A	Species considered secure
Plants	**American mannagrass**	*Glyceria grandis*	G5, S1.3 (CA)	Fen, meadow, seep, marsh, swamp	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Suspected to occur within the Lake Tahoe watershed
Plants	**Boggs Lake Hedge-hyssop**	*Gratiola heterosepala*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Cusick's Stickseed**	*Hackelia cusickii*	G5		N/A	Species considered secure
Plants	**Blandow's helodium moss**	*Helodium blandowii*	G5, S1.3 (CA), FSS	Meadowsee p, fens	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Parry's Horkelia**	*Horkelia parryi*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**shortleaf alpinegold**	*Hulsea brevifolia*	G3, S3.2(CA), FSS		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Sierra Valley Ivesia**	*Ivesia aperta var. aperta*	G2T2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Pine Nut Ivesia**	*Ivesia pityocharis*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Grimy Ivesia**	*Ivesia rhypara var. rhypara*	G2T1		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Plumas Ivesia**	*Ivesia sericoleuca*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Webber Ivesia**	*Ivesia webberi*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Plants	**Red Bluff Rush**	*Juncus leiospermus*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Ahart Rush**	*Juncus leiospermus var. ahartii*	G2T1, S1.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Red Bluff Rush**	*Juncus leiospermus var. leiospermus*	G2T2, S2.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Legenere**	*Legenere limosa*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Kellogg's lewisia**	*Lewisia kelloggii ssp. hutchisonii*	G4T2T3, S2S3.3 (CA), FSS	Flat open forest	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Suspected to occur within the Lake Tahoe watershed
Plants	**Kellogg's lewisia**	*Lewisia kelloggii ssp. kelloggii*	G4T4?, FSS	Flat open forest	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Suspected to occur within the Lake Tahoe watershed
Plants	**Long-petaled Lewisia**	*Lewisia longipetala*	G2, S2.2 (CA), FSS	Rocky habitats – granitic slabs	Yes – DC 64 Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Saw-toothed Lewisia**	*Lewisia serrata*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Sage-like Loeflingia**	*Loeflingia squarrosa ssp. artemisiarum*	G5T2T3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Packard's Desert-parsley**	*Lomatium packardiae*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Raven's Lomatium**	*Lomatium ravenii*	G4		N/A	Species considered secure
Plants	**Rose-flower Desert-parsley**	*Lomatium roseanum*	G2G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Mount Rose Lupine**	*Lupinus caudatus ssp. Montigenus*	G5T4		N/A	Species considered secure
Plants	**Jaw-leaf Lupine**	*Lupinus malacophyllus*	G3?		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Meesia Moss**	*Meesia longiseta*	G4?, LSI	Stream banks, fens, meadows	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Suspected to occur within the Lake Tahoe watershed, not yet known from FS land in CA

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Plants	**Three-ranked Hump Moss**	*Meesia triquetra*	G5, S3S4.2 (CA), FSS	Fens, wetland sites	Yes Suspected to occur within the Lake Tahoe watershed, not yet known from FS land in CA General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed, common in the LTB but is still a R5 sensitive
Plants	**Broad-nerved Hump Moss**	*Meesia uliginosa*	G4, S2.2 (CA), FSS	fens	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants		*Mielichhoferia mielichhoferia na var. elongata*	G4?T4?, S2.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Mount Rose Monkeyflower**	*Mimulus angustifolius*	G1?Q, S1 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Effleaf Monkeyflower**	*Mimulus ovatus*	G1G2Q		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Myurella Moss**	*Myurella julacea*	G5, S1.3 (CA), LSI		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Pincushion Navarretia**	*Navarretia myersii ssp. Myersii*	G1T1		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Northern Adder's-tongue**	*Ophioglossum pusillum*	G5		N/A	Species considered secure
Plants	**Sand Cholla**	*Opuntia pulchella*	G4		N/A	Species considered secure
Plants	**Orthotrichum moss**	*Orthotrichum praemorsum*	G2, LSI	Rocky habitat	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Shevock's bristle moss**	*Orthotrichum shevockii*	G1, S1.3 (CA), LSI	rocky habitats – rock outcrops	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Spjut's bristle moss**	*Orthotrichum spjutii*	G1, S1.3 (CA), LSI	rocky habitats – volcanic rock walls	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Suspected to occur within the Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Plants	**Nevada Oryctes**	*Oryctes nevadensis*	G2G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Layne's Butterweed**	*Packera layneae*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Lichens	**Veined water lichen**	*Peltigera hydrothyria*	G3G5, FSS	Streams	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Wassuk Beardtongue**	*Penstemon rubicundus*	G2G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Susanville Beardtongue**	*Penstemon sudans*	G2G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Playa Phacelia**	*Phacelia inundata*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Stebbins Phacelia**	*Phacelia stebbinsii*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Washoe Pine**	*Pinus washoensis*	G3Q		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Clustered Popcorn-flower**	*Plagiobothrys glomeratus*	G2G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Tundra Pohlia Moss**	*Pohlia tundrae*	G2G3, S2.3 (CA), LSI	Rocky habitats – alpine boulder and rock fields	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed, not sure if populations occur on LTBMU land
Plants	**Nuttall's Pondweed**	*Potamogeton epihydrus ssp. Nuttallii*	G2G3, S2.3 (CA)	Marshes, swamps	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed, not sure if populations occur on LTBMU land
Plants	**Slender Pondweed**	*Potamogeton filiformis*	G5, S1S2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Flatleaf Pondweed**	*Potamogeton robbinsii*	G5, S2.3 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Hartweg's Golden Sunburst**	*Pseudobahia bahifolia*	G2, FE		N/A	species occurs outside the LTBMU - Lake Tahoe watershed - also not on FWS list for LTBMU

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Plants	**Alder-leaved Buckthorn**	*Rhamnus alnifolia*	G5, S2.2 (CA)	Wet meadow, lodgepole forest	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed, not sure if populations occur on LTBMU land
Plants	**Tahoe Yellowcress**	*Rorippa subumbellata*	G1 Candidate Species, SE, S1.1(CA), S1S2 (NV), FSS, TRPA-SI	sandy, shoreline habitats	Yes DCs 77 Strategies – Biological Resource Program S&Gs 100, 103	NOT SECURE Endemic to the Lake Tahoe watershed
Plants	**Sanford's Arrowhead**	*Sagittaria sanfordii*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Water Bulrush**	*Schoenoplectus subterminalis*	G4G5, S2.3 (CA)	Lakes, ponds, marshes	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed, not sure if populations occur on LTBMU land
Plants	**Hooded Skullcap**	*Scutellaria galericulata*	G5, S2.3 (CA)	Meadows, seeps	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Known to occur within the Lake Tahoe watershed
Plants	**Sweet Marsh Ragwort**	*Senecio hydrophiloides*	G4G5, S2.3 (CA)	Mesic habitats	Yes Known to occur within the Lake Tahoe watershed General Desired Conditions & Strategies – Biological Resource Program	SECURE Suspected to occur within the Lake Tahoe watershed
Plants	**Naked Catchfly**	*Silene nuda ssp.nuda*	G4G5T1T2Q, SNR (CA), S1S2 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Monroe's Desert Mallow**	*Sphaeralcea monroana*	G4, S1.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Peat Moss**	*Sphagnum* sppecies	Genus as habitat indicator	fens	Yes General Desired Conditions & Strategies – Biological Resource Program	SECURE Genera is indicative of unique wetland habitats in Sierra Nevada
Plants	**Masonic Mountain Jewelflower**	*Streptanthus oliganthus*	G3, S2.2(CA), S2 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species in LMP and or in EIS – How is species addressed	Comments / Rationale – Secure / Not Secure (as it relates to viability chart – Figure E1).
Plants	**Beatley's Clover**	*Trifolium andersonii ssp. Beatleyae*	G4T4		N/A	Species considered secure
Plants	**Lemmon's Clover**	*Trifolium lemmonii*	G4?		N/A	Species considered secure
Plants	**Whitebark Pine**	*Pinus albicaulis*	Federal Candidate, FSS	Subalpine and timberline on rocky soils	YES DCs 80-82 Strategies – Biological Resource Program S&G 93	NOT SECURE Species specific management ; this species was listed as FSS for the LTBMU in June 30, 2013
Plants	**El Dorado Mule's-ears**	*Wyethia reticulata*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Reptiles	**Pacific Pond Turtle**	*Actinemys marmorata*	G3G4, S3(CA) S3 (NV)	ponds	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Reptiles	**Northern Pacific Pond Turtle**	*Actinemys marmorata marmorata*	G3G4T3Q, SSC S3(CA), S3 (NV)	ponds	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Reptiles	**Rubber Boa**	*Charina bottae*	G5, S4 (CA) S3S4 (NV)	riparian, general forest	N/A	local population considered secure
Reptiles	**Northern Alligator Lizard**	*Elgaria coerulea*	G5, S5 (CA) S2S3 (NV)	riparian, general forest	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to population considered secure in CA and not occurring on the NV side of the LTBMU
Reptiles	**Sierra Alligator Lizard**	*Elgaria coerulea palmeri*	G5T4, S2S3 (NV)	riparian, general forest	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to population considered secure in CA and not occurring on the NV side of the LTBMU

Appendix F: Social and Economic Assessment

Introduction

The Lake Tahoe Basin Management Unit (LTBMU) is an integral part of the economy and social life of Lake Tahoe Basin communities. Visitors from around the country and the world are attracted to Lake Tahoe to enjoy a variety of recreational activities. The scenic quality of Lake Tahoe and its surrounding landscape make visiting the Lake Tahoe Basin a one-of-a-kind experience. The LTBMU contributes to the Lake Tahoe Basin's scenic quality through the conservation and management of vegetation, waterways, infrastructure, and recreation. Recreation opportunities supported by interpretation and conservation education enrich the recreation experience and contribute to enhancing the public's environmental literacy. The Lake Tahoe Basin's economy is driven largely by recreation and tourism. The LTBMU plays an important role in providing outdoor recreation opportunities and preserving the scenic quality of the Tahoe Basin's lands and waterways.

Information and data used in this assessment was collected from the following sources.

- US Census Bureau statistics
- US Bureau of Labor Statistics
- US Bureau of Economic Analysis
- Economic Profile System by Headwaters Economics
- National Visitor Use Monitoring (NVUM) survey

Study Area

The Lake Tahoe Basin is composed of approximately 200,000 acres of land, of which the Lake Tahoe Basin Management Unit manages approximately 150,000 acres. While the land area of the Lake Tahoe Basin is relatively small, there are many political entities represented. Within the Lake Tahoe Basin, there are five counties, the Tahoe Regional Planning Agency (TRPA), two cities, and two states (see Figure F1). . Along with state, county, and city ownership, close to 90% of Lake Tahoe Basin lands are in public ownership.

The communities within the Lake Tahoe Basin represent only a small share of the surrounding county's total population (which includes the large communities of Placerville, CA and Reno, NV) therefore social and economic data based on county level data overwhelms the social and economic trends of Lake Tahoe communities. While the communities in the Basin differ in many respects, they are united by geography, economy, and social values. So, two assessment areas are used in the Social and Economic Assessment to illustrate the roles and contributions the LTBMU plays in providing local and regional communities with social and economic benefits. The use of multiple study areas also reveals management implications associated with servicing different populations.

The larger area is the Greater Lake Tahoe Area (GLTA) (Figure F1). The GLTA is representative of the region's functional economy, meaning this is where Lake Tahoe Region residents and businesses are likely to purchase a significant amount of their goods, services, and housing. Counties within the GLTA are influenced by spending patterns of residents, visitors and businesses within the LTR, and have a direct influence on visitor rates and use patterns on the LTBMU.

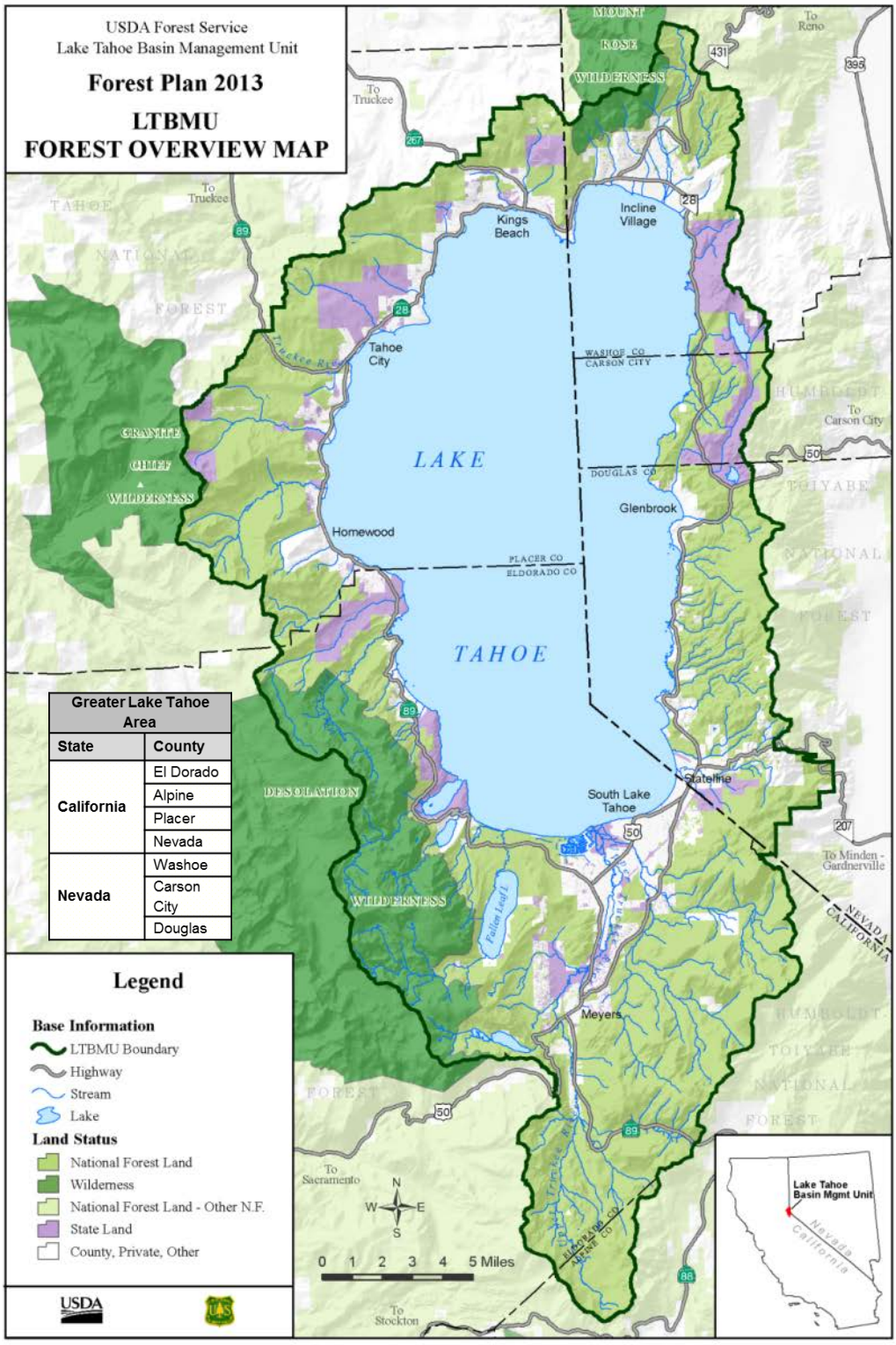

Figure F 1. Greater Lake Tahoe Area (GLTA)

The smaller area is located within the Lake Tahoe Basin Management Unit's exterior boundary and is referred to as the "Lake Tahoe Region," or LTR (Figure F2). The communities within the LTR have a relatively high degree of economic responsiveness to recreation revenues, and there are pronounced social differences between Lake Tahoe communities and adjacent communities located outside of the Lake Tahoe Basin. Census County Divisions (CCDs) from the US Census Bureau are the geographic units used to analyze the LTR social and economic assessment.

The Lake Tahoe Basin Management Unit's influence on the Lake Tahoe Region economy is much greater than on the Greater Lake Tahoe economy given the relative size and diversity of the two economies.

Census County Divisions (CCD)	Community
Zephyr Cove	Glenbrook Zephyr Cove Lake Ridge
Incline Village	Incline Village Stateline
South Lake Tahoe	Meyers Tahoma City of South Lake Tahoe
Lake Tahoe	Brockway Lake Forest Rampart (Sunnyside) Tahoe Pines Homewood Chambers Lodge Tahoe Vista

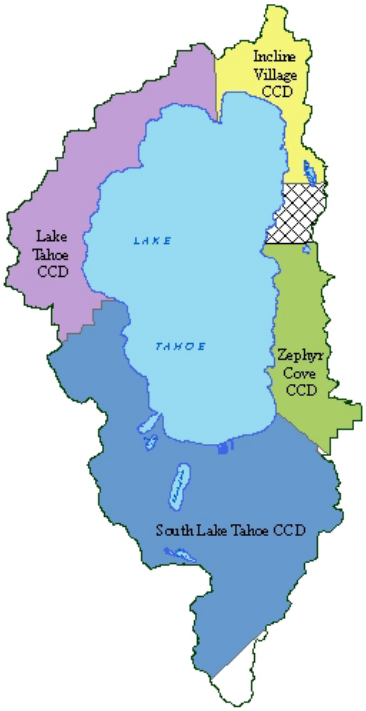

Figure F 2. Lake Tahoe Region by Census County Divisions (CCD)

Background

For thousands of years, the people of the Washoe Tribe traveled to the shores of Lake Tahoe in the summer to live, trade, and reaffirm tribal unity. The Washoe way of life was greatly impacted in 1859 with the Virginia City silver strike, which marked the beginning of the Comstock Era. By 1890, the forests of Lake Tahoe had been largely clear-cut to fuel mining operations, shore-up mine shafts, and provide building supplies for rapidly growing Virginia City. The lands around Lake Tahoe provided forage for sheep and were home to Basque sheepherders from the 1850s to the 1950s.

In 1899, President William McKinley designated 13,000 acres of Lake Tahoe forests as National Forest Reserves, which would mark the beginning of federal acquisitions in the Tahoe Basin. Between 1890 and 1920, Lake Tahoe was a popular resort destination for wealthy and elite families from San Francisco. Roads were paved during the 1920s and 1930s: Lake Tahoe became accessible to a greater number of people, and tourism and recreation soon became a dominant industry in the Lake Tahoe Basin. The 1940s marked the beginning of the gaming industry, which grew quickly, attracting vacationers looking for urban amenities in a scenic setting. With the 1960 Winter Olympic Games at Squaw Valley Resort, development escalated as Tahoe became known as an international recreation destination.

At this same time, the Forest Service acquired large tracts of land in the Lake Tahoe Basin, and management of this land was divided among three forests: the Eldorado, the Humboldt-Toiyabe and the Tahoe National Forest. However, by 1973, National Forest land managers recognized the need to manage Lake Tahoe's upland resources separately to preserve the unique nature of Lake Tahoe. It was with this goal that the Lake Tahoe Basin Management Unit was formed by carving out sections of the three forests to approximate Lake Tahoe's watershed boundary.

Much of the LTBMU's management priorities and objectives have been driven by legislative acts, which have served to authorize funding for the acquisition and restoration of lands within the Lake Tahoe Basin. In 1980, Congress passed the Santini-Burton Act (PL 96-586), which authorized funding and directed the LTBMU to acquire environmentally sensitive lands, restore watersheds on acquired National Forest System lands, and administer erosion control grants to local government. Thirteen thousand acres have since been acquired through the Santini-Burton Act, of which many are small parcels interspersed throughout urban neighborhoods.

The Lake Tahoe Restoration Act (LTRA), signed by President Bill Clinton in 1997, recognized the unique scenic and ecological features of Lake Tahoe, as well as Lake Tahoe communities' economic dependence on the perpetuation of these characteristics. The LTRA was designed to enable the Forest Service to plan and implement significant new environmental restoration and forest management activities to address water quality, water clarity, and forest health in coordination with Federal, State, local, regional, tribal and private entities. While the LTRA was intended to increase restoration in the Lake Tahoe Basin, this objective was not fully implemented due to lack of federal funding until the Southern Nevada Public Lands Management Act (SNPLMA) was amended in 2003. The SNPLMA amendment guaranteed agencies in the Lake Tahoe Basin a consistent flow of federal funds for eight years, with an average annual funding level of $37.5 million. With these funds, large watershed restoration projects to restore meadows and forest health and reduce fuels have commenced. This funding is scheduled to end by 2015, with some projects lasting for a few years past when funding is granted.

Social Conditions and Tends

Population

The LTR, with a population of 51,774 represents a small fraction of the GLTA population of 1,043,723 people in 2011. Within the LTR, more than half of the population resided in the South Lake Tahoe CCD. Between 2000 and 2011, Nevada's population grew by almost 34%, while California's population grew at a much slower rate increasing by a little over 9%. The GLTA grew in population by close to 25%. In contrast, the LTR lost 17.6% of its population. An article in the Sierra Sun (March 9, 2011) attributed this loss in population to a worsening economy. Also, the gaming industry declined over 50% since 1990 so there are fewer jobs in the LTR to hold people there. There is also a trend toward increasing second home ownership by people who do not live year-round in the Lake Tahoe Basin area. These are used as vacation homes and do not contribute toward such things as kids in schools, year-round shopping in the local community, etc.

Table F 1. Population 2000-2011

Assessment Area	2000 Census	2011 ACS* Census	% Change Since 2000
Nevada	1,998,257	2,673,396	33.8%
California	33,871,648	36,969,200	9.1%
Carson City Co, NV	52,457	55,378	5.6%
Douglas County, NV	41,259	47,058	14.1%
Washoe County, NV	339,486	417,855	23.1%
El Dorado County, CA	156,299	179,878	15.1%
Placer County, CA	248,399	343,554	38.3%
Greater Lake Tahoe Area (GLTA)	837,900	1,043,723	24.6%
Incline Village CCD, NV	9,952	8,347	-16.1%
Zephyr Cove CCD, NV	6,739	4,098	-39.2%
Lake Tahoe CCD, CA	12,158	9,491	-21.9%
South Lake Tahoe CCD, CA	34,042	29,838	-12.3%
Lake Tahoe Region (LTR)	62,891	51,774	-17.7%
% LTR of GLTA	7.5%	5.0%	

*ACS = American Community Survey

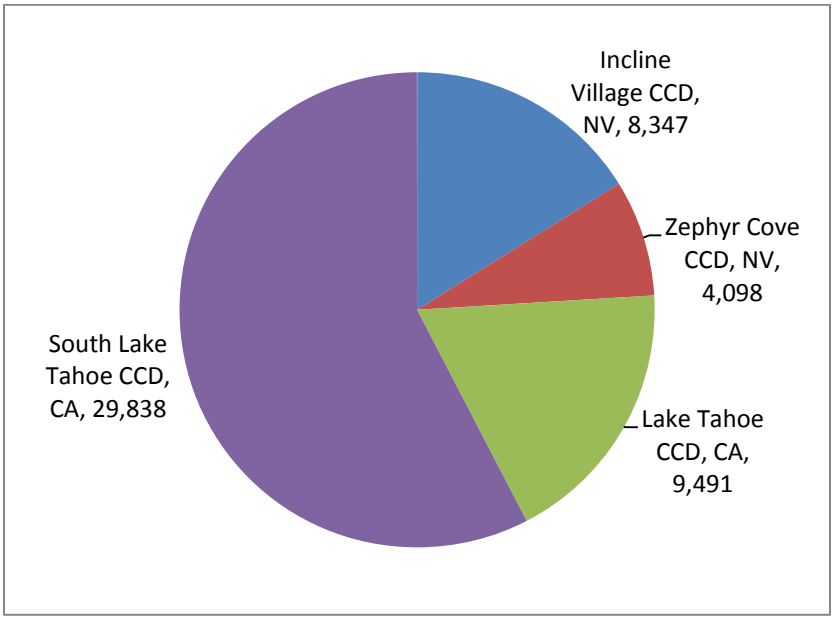

Figure F 3. Percent Population, LTR, 2011

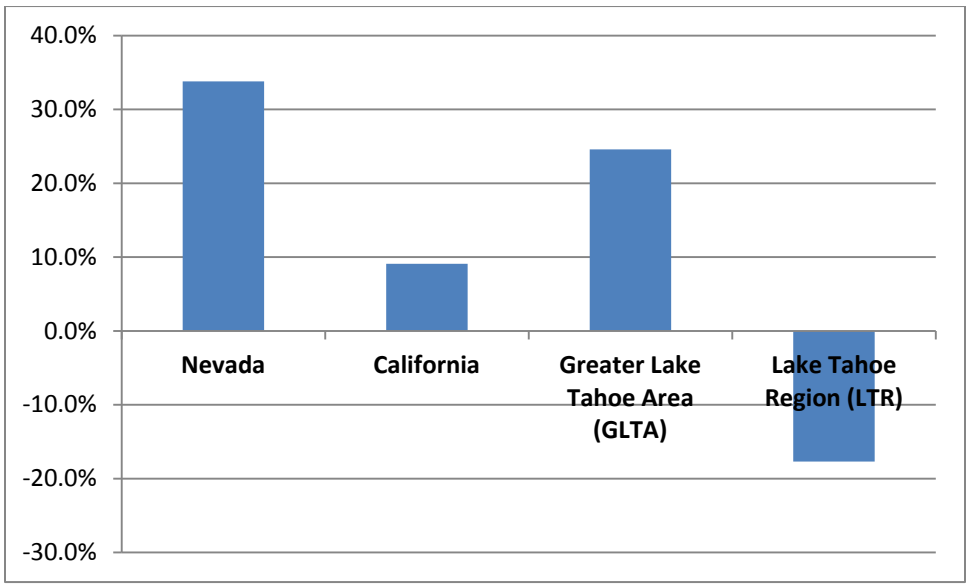

Figure F 4. Population Change, Regional, 2000-2011

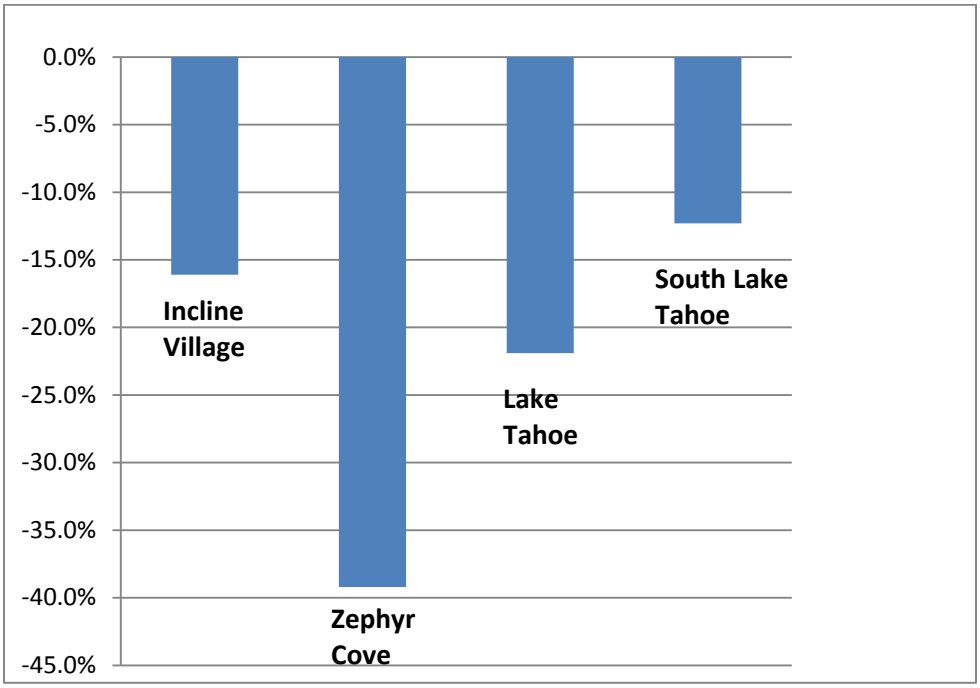

Figure F 5. Population Change, LTR, 2000 - 2011

Race and Ethnicity

Compared to California and Nevada, the GLTA and the LTR are not as racially and ethnically diverse. In the GLTA, 82% of the population is white, while in the LTR, 84% of the population is white. Within the LTR, South Lake Tahoe CCD is the most racially diverse of the four CCDs, followed by Lake Tahoe CCD.

Just over 37% of California's population was Hispanic in 2010, while Nevada's Hispanic population was reported at 26%. The GLTA had the lowest Hispanic population of the four regions, while the LTR, with a 22% Hispanic population was similar to Nevada's Hispanic composition. Within the LTR 12,206 people identified themselves as Hispanic during the 2010 census. The South Lake Tahoe CCD had the largest Hispanic population with 7,345 people representing 24% of the SLT CCD population. Lake Tahoe CCD was also 27% Hispanic, with 2,720 Hispanic residents. The South Lake Tahoe CCD and Lake Tahoe CCD had on average over 4 times the population of Hispanics than Incline Village and Zephyr Cove.

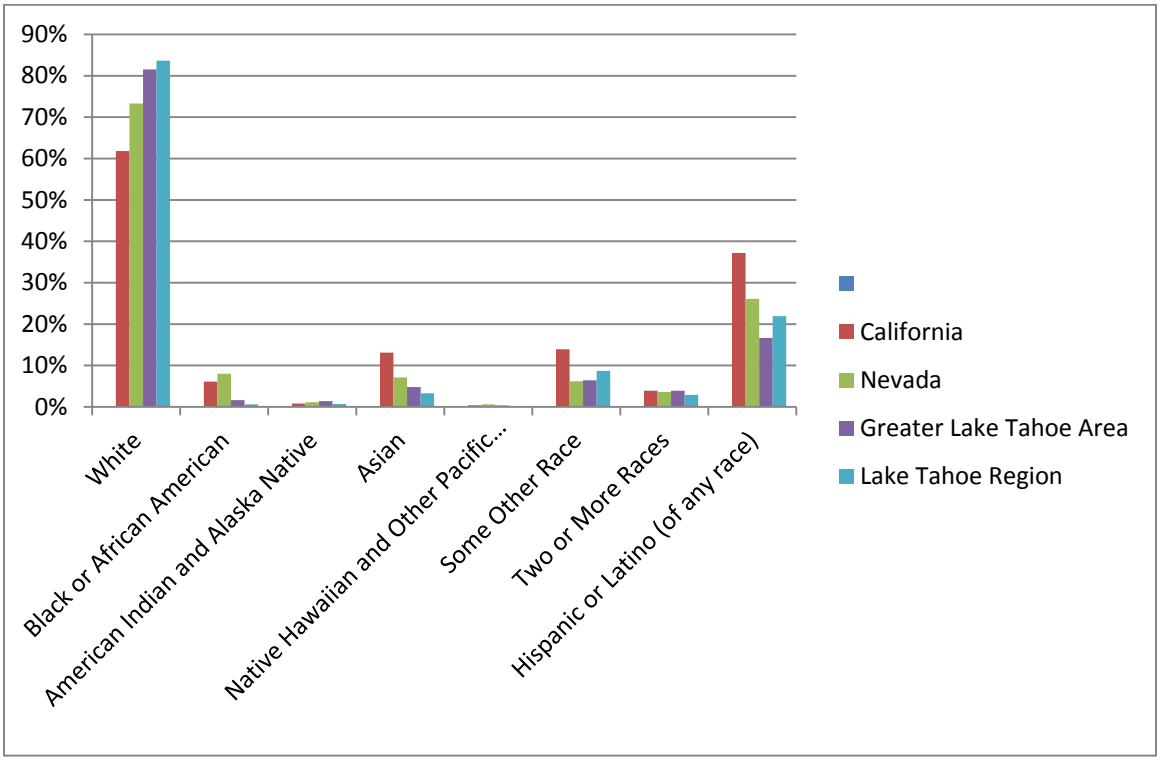

Figure F 6. Race and Ethnicity, Regional, 2011

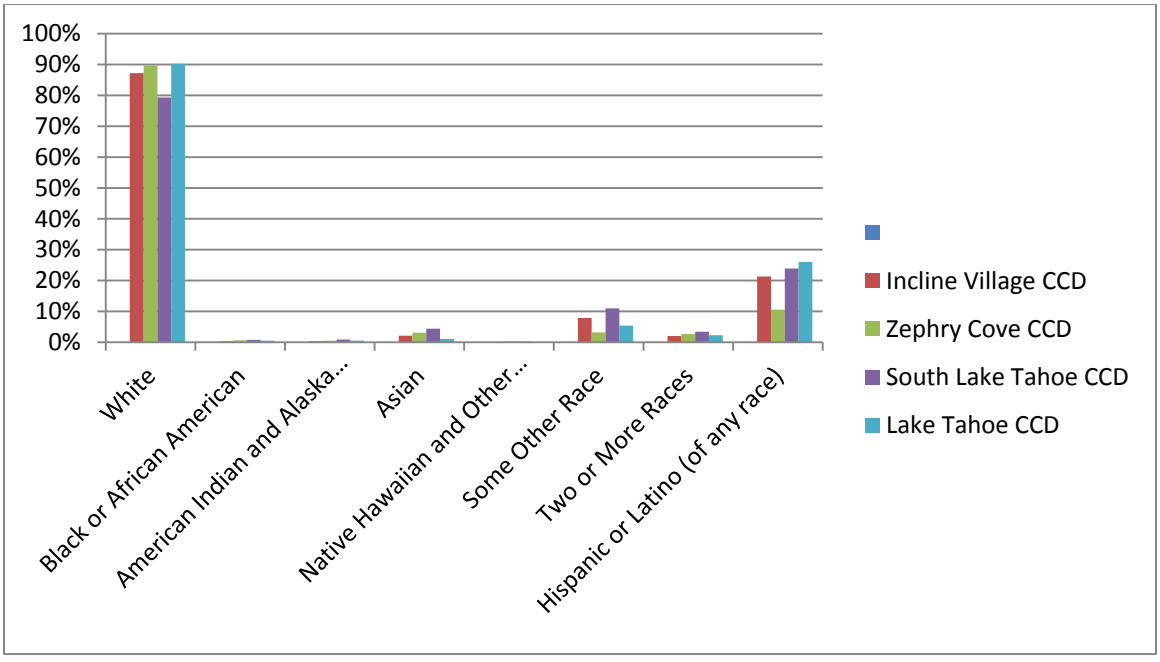

Figure F 7. Race and Ethnicity by CCD, LTR, 2011

Table F 2. Race and Ethnicity, LTR, 2011

Race/Ethnicity	Incline Village CCD	Zephyr Cove CCD	South Lake Tahoe CCD	Lake Tahoe CCD	Total Lake Tahoe Region
Total population	8,347	4,098	29,838	9,491	51,774
One Race	8,339	4,058	28,670	9,332	50,399
White	7,632	3,812	23,849	9,010	44,303
Black or African American	19	3	139	39	200
American Indian and Alaska Native	130	0	451	72	653
Asian	282	47	1,001	57	1387
Native Hawaiian and Other Pacific Islander	28	1	1	0	30
Some Other Race	248	195	3,229	154	3826
Two or More Races	8	40	1,168	159	1375
HISPANIC OR LATINO					
Hispanic or Latino (of any race)	1,611	778	7,483	3,176	13,048
Not Hispanic or Latino	6,736	3,320	22,355	6,315	38,726

Poverty

Census poverty estimates are based on a set of income thresholds for various family sizes and are the same regardless of geography or cost of living. If a family is found to make less than the threshold, then every family member is considered to be in poverty. So while it appears that across almost all races, people living in the GLTA and LTR experience less risk of living in poverty than the general population of California and Nevada, this may not accurately reflect the occurrence of poverty within the LTRs high cost-of-living census county divisions within the Lake Tahoe Basin.

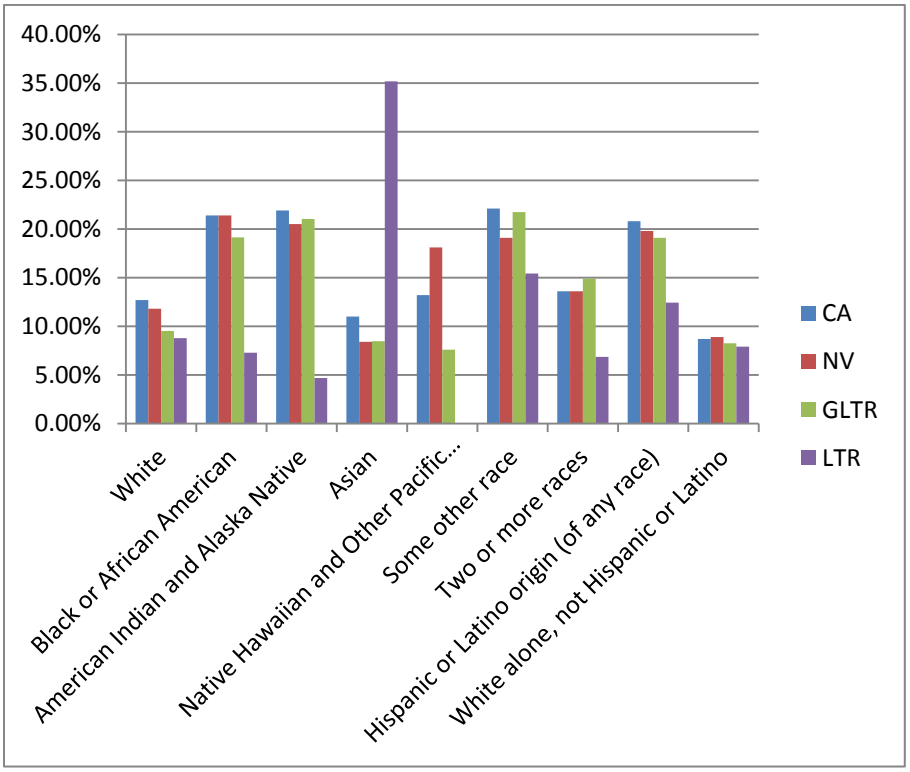

Figure F 8. Poverty by Race and Ethnicity, Regional, 2011

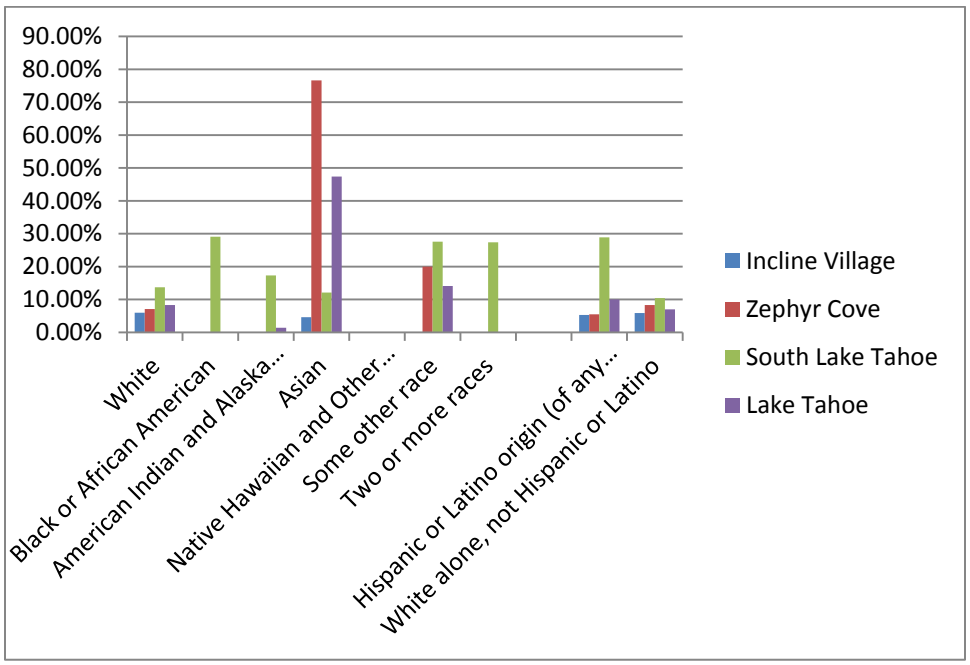

Figure F 9. Poverty by Race and Ethnicity, LTR, 2011

Age Distribution

The GLTA and LTR had more people in the 45 to 64 age range than Nevada and California, and less people under 45 than Nevada and California. The GLTA and LTR had fewer young people under 19 than Nevada and California. When looking at communities in the LTR, Nevada community populations were older than California community populations. Fifty-four percent of Nevada communities within the LTR were 45 years and older, compared to California communities within the LTR at 41%.

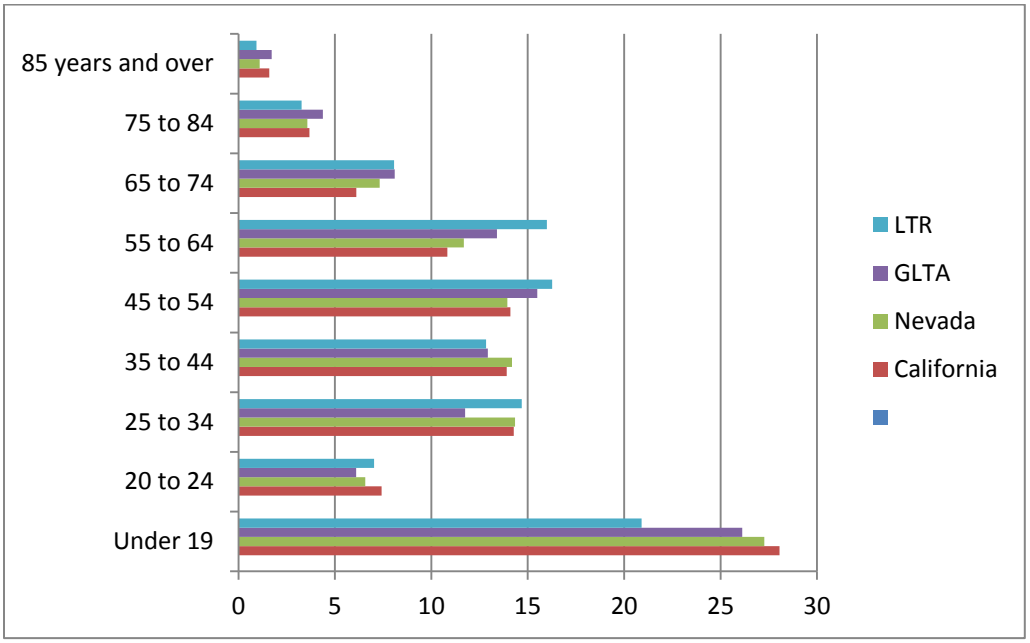

Figure F 10. Age Distribution, Regional, 2010

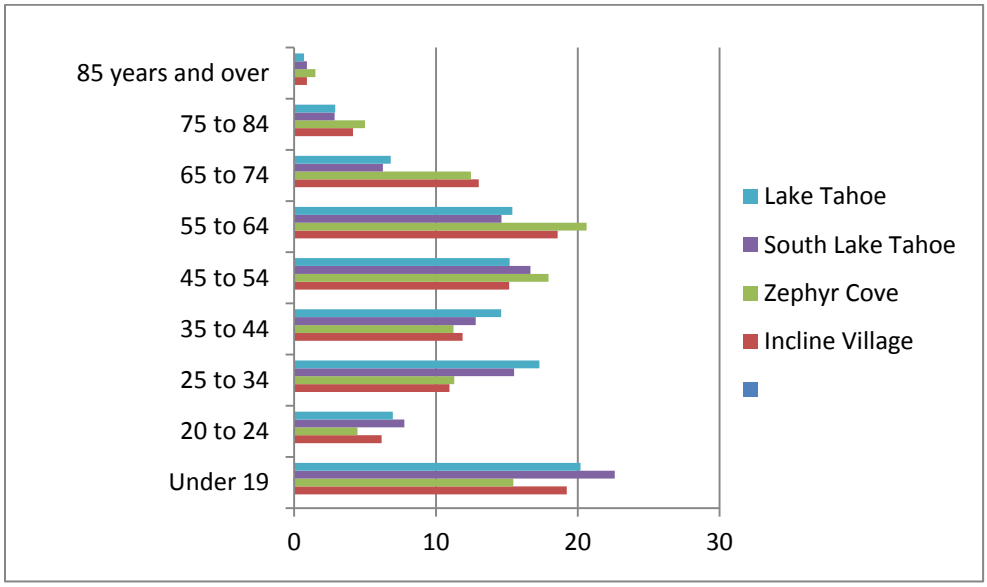

Figure F 11. Age Distribution, LTR, 2010

Educational Attainment

Educational Attainment in the GLTA and LTR compared favorably against state percentages. Both the GLTA and LTR had a higher percentage of high school graduates than Nevada and California. When considering the percentage of population with a bachelor's degree or higher, the LTR outranked all other regions; however, GLTA was consistent with California and exceeded Nevada's rate.

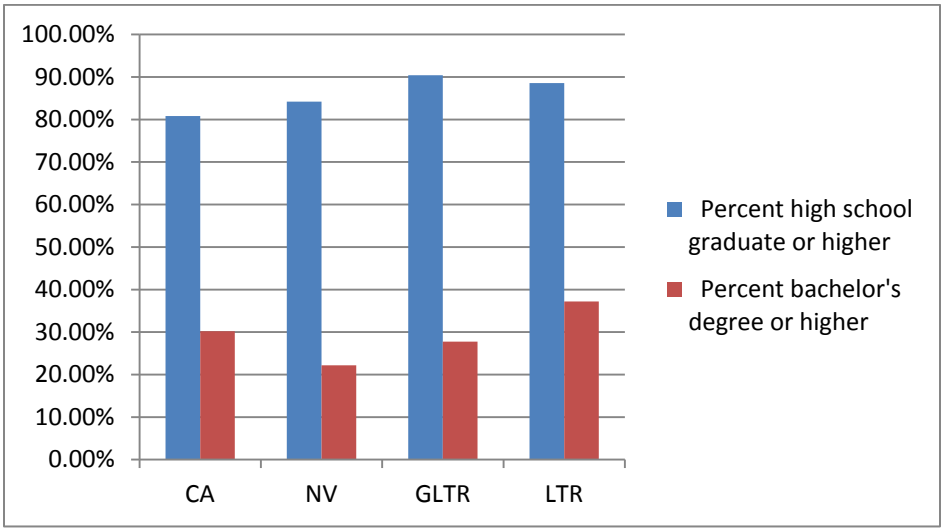

Figure F 12. Educational Attainment, Regional, 2011

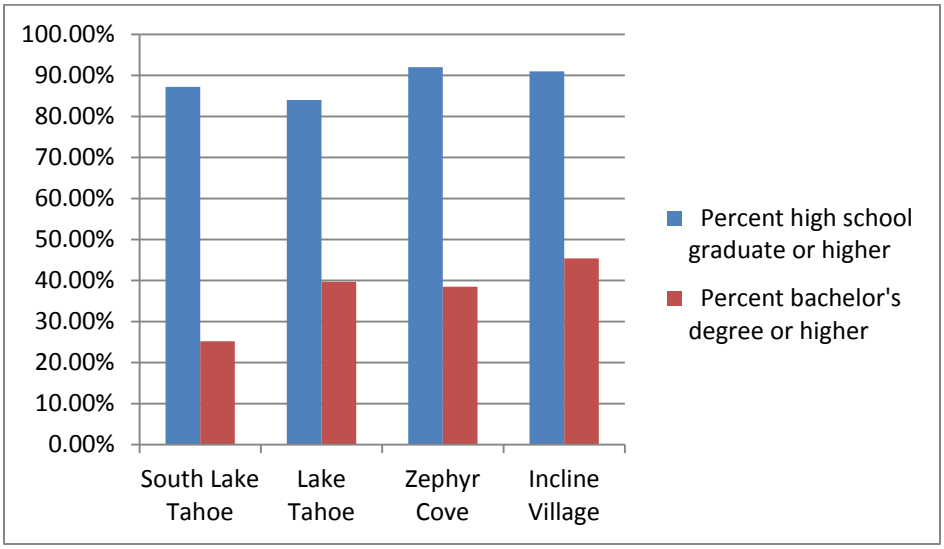

Figure F 13. Educational Attainment, LTR, 2011

Housing

When considering housing occupancy status, the LTR differs greatly from all other regions with a 45% vacancy rate, outstripped the next highest rate, which was for the GLTA at 34%. Of the vacant housing units, the LTR and the GLTA were used primarily for seasonal, recreational, or occasional use. Only 8% of the vacant homes in the LTR were rental units compared to 34% for California and 37% for Nevada. When looking at homeownerships rates the GLTA exceeded all other regions, and the LTR was on par with California and Nevada. Housing data is from the 2010 Census.

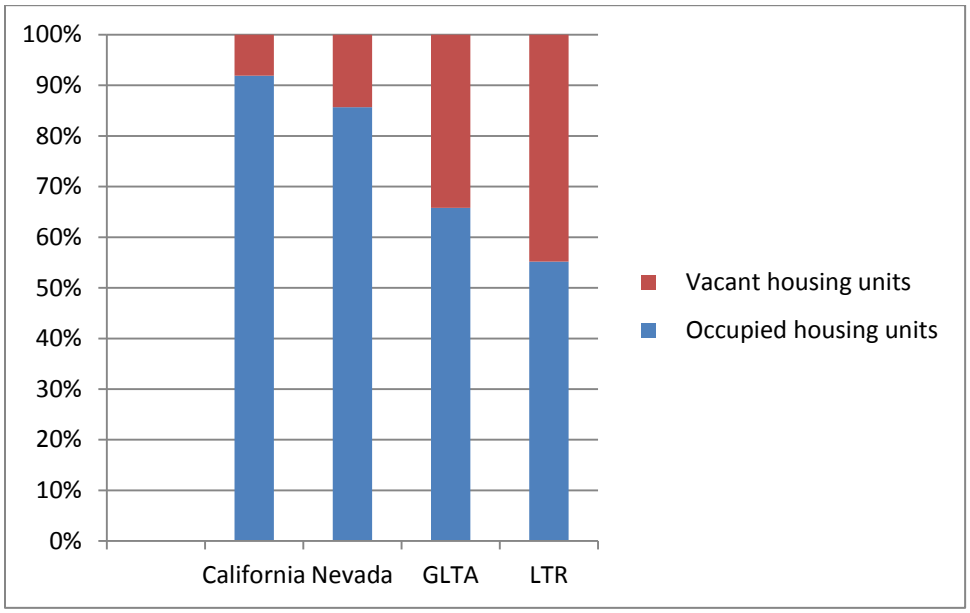

Figure F 14. Housing Occupancy Status, Regional, 2010

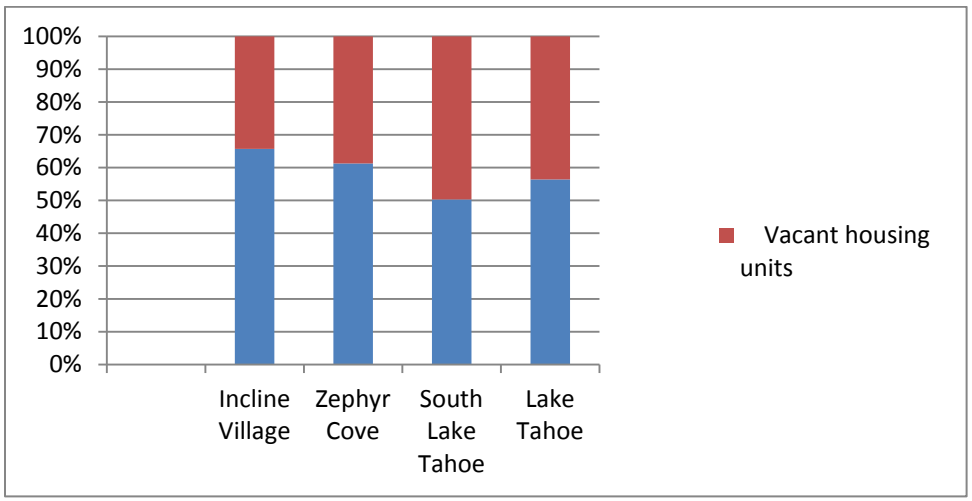

Figure F 15. Housing Occupancy Status, LTR, 2010

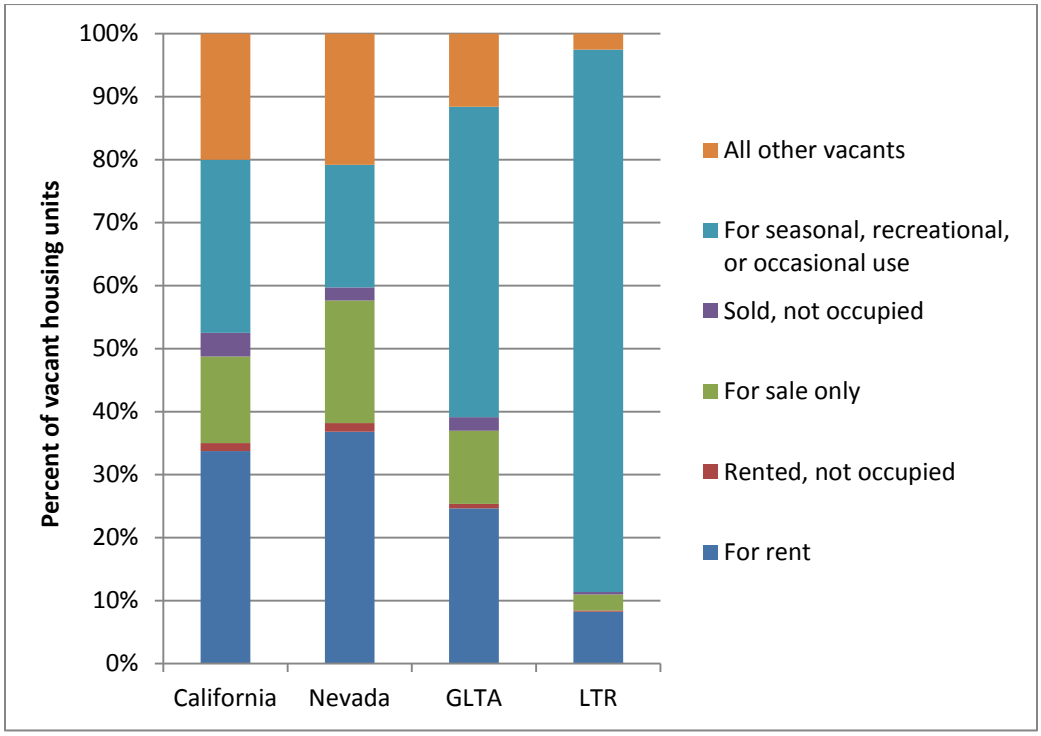

Figure F 16. Housing Tenure, Regional, 2010

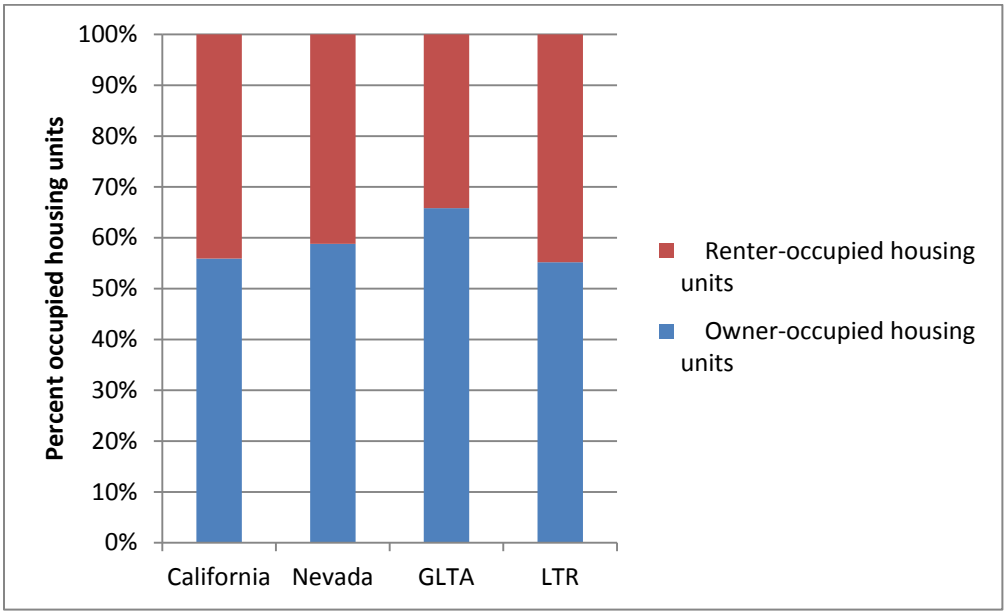

Figure F 17. Renter vs. owner-occupied housing, 2010

Discussion

The almost 25% rise in population between 2000 and 2011 in the GLTA translates into higher day-use demand being placed on recreation opportunities in the Lake Tahoe Basin. As reported by National Visitor Use Monitoring reports, shown in Figure F- 14), 41.7% of visitors live within the GLTA. Compared to the surrounding area and states of California and Nevada, it is unusual to see an almost 18% drop in population from 2000 to 2011 in the LTR. This is at least in part due to a decline in the gaming/casino industry, increased second home ownership, and the general decline in economic condition over this time period.

California LTR communities were generally younger and had a greater degree of ethnic diversity than Nevada communities. With respect to ethnic diversity, the LTR was just a little over half of the California Hispanic percent of population. This indicates a need to design interpretive displays, education programs and planning events that integrate the Lake Tahoe Basin's Hispanic communities in National Forest land management. Meetings designed to integrate the Hispanic community should be located in areas with the greatest concentration of Hispanic population.

Overall communities in the GLTA and LTR had relatively high educational attainment rates when compared to state rates. The GLTA and LTR high school graduation rates exceeded that of California and Nevada, as did three LTR communities: Incline Village CCD; Zephyr Cove CCD; and Lake Tahoe CCD; exceed state rates in percentage of bachelor's degree or higher.

The housing status in the LTR is vastly different in respect to occupancy status and vacancy status from the other regions compared in this study. Close to half of the housing units in the LTR are vacant for seasonal, recreational, and occasional use. This presents a challenge in respect to communicating with and involving absentee landowners in forest planning and programs.

Economic Conditions and Trends

(Note: Employment and Income for the Lake Tahoe CCD's had not been updated to the 2010 Census as of this writing (9/16/11), so the write-up using the earlier information from the previous Social-Economic Specialist Report written by Christy Prescott (former LTBMU Economist and Susan Winter (Economist for the WO Ecosystem Management Coordination staff) is presented here as it was written.)

Employment (Current Condition and Trends)

The number of full-time and part-time positions in the GLTA was 623,742 in 2003. Wage and salary positions comprised the largest sector, which accounted for 77% of employment, while non-farm proprietorship accounted for 23%, and farm proprietorship accounted for 0.5 %. The GLTA non-farm proprietor sector accounts for 3.4% more in employment and 3.5% lower in wage and salary employment than California and Nevada combined. Farm proprietor employment was slightly higher in the GLTA than in Nevada and California. Nevada and El Dorado Counties' employment composition differed the most from the GLTA, with a greater proportion of employment from non-farm proprietorships and lesser proportion of employment in wage and salary employment.

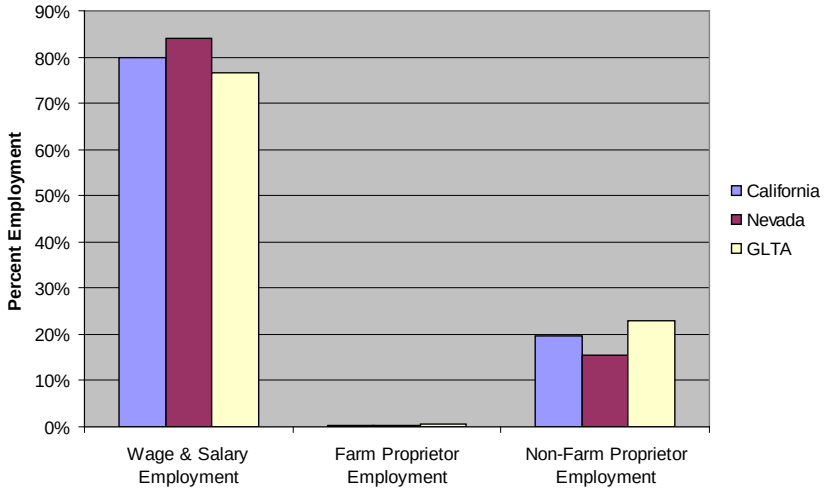

Figure F 18. Employment by Labor Sector, Regional, 2003

When considering the GLTA's employment by industry compared to state figures, the GLTA more closely resembles California's employment structure over Nevada's. Public administration and retail sales provided the greatest share of employment in the GLTA and California. Employment in accommodations and food service was the third highest in the GLTA with 11%; however, Nevada outpaced the GLTA by 10%. Overall, the GLTA employment was more evenly distributed across industries than Nevada, but less so than California.

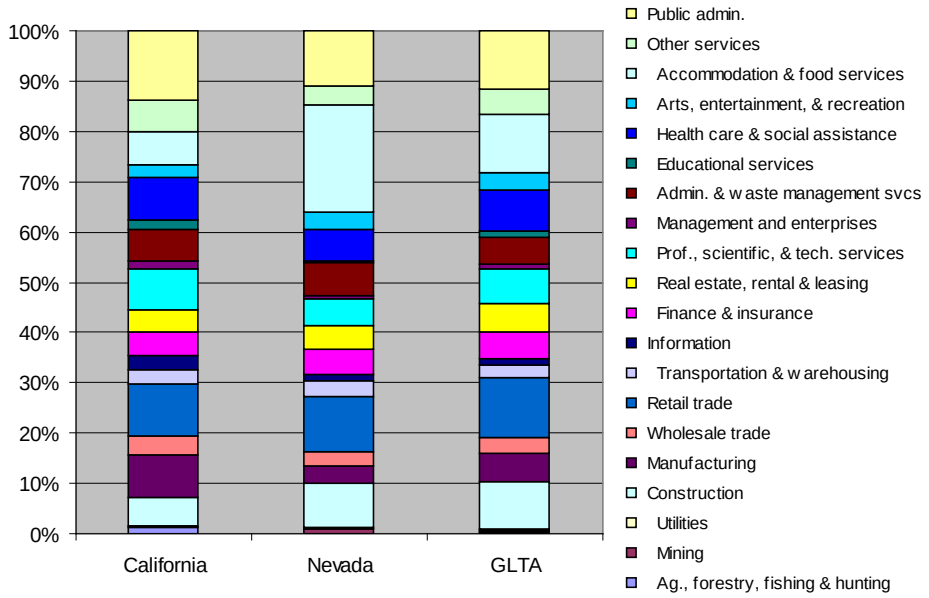

Figure F 19. Regional Comparison of Employment by Industry (NAICS), 2003

Figure F-20 illustrates the employment structure of the GLTA and LTR in 2006. Employment represents part-time, full-time, seasonal, and temporary jobs in the given category. The GLTA has a greater degree of diversity than the LTR, which is to be expected given that the GLTA encompasses a metropolitan area, as well as rural areas. Tourism-related industries dominate the LTR economy with over a quarter of employment opportunities in accommodation and food services, and 8% in arts, entertainment, and recreation. Tourism-related industries assume a much smaller percentage in the GLTA with accommodation and food services accounting for 11% and arts, entertainment and recreation accounting for 3% of employment.

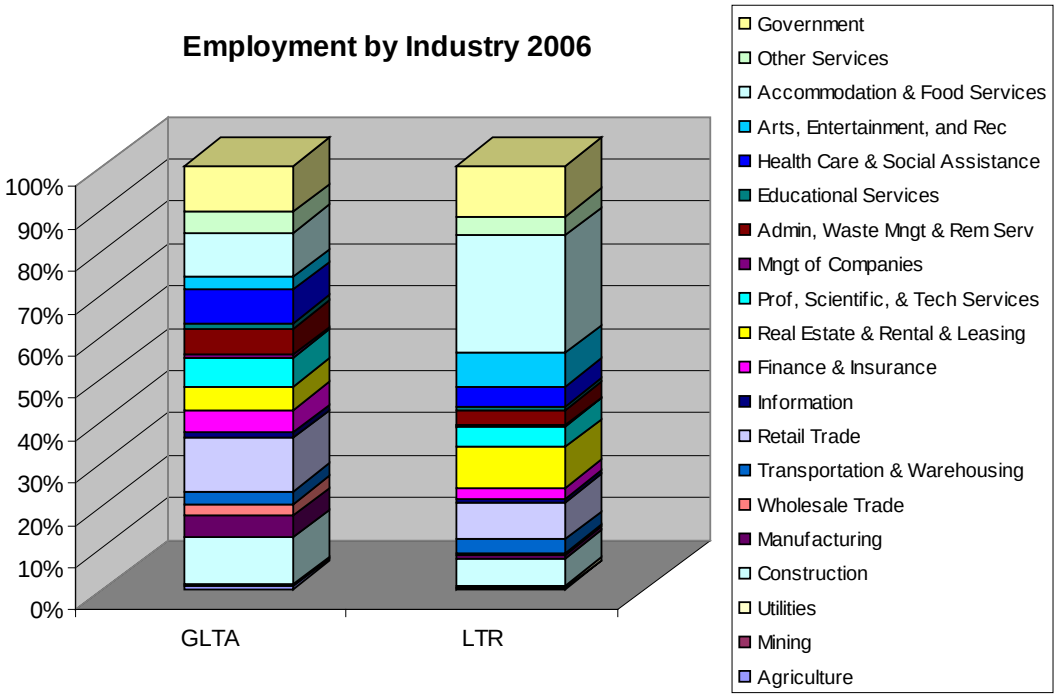

Figure F 20. Employment by Industry (NAICS), GLTA and LTR, 2006

Figure F21 illustrates employment by industry among census county divisions (CCD) within the Lake Tahoe Region. The Zephyr CCD far exceeds all other CCDs in the Lake Tahoe Region in the arts, entertainment, and recreation sector; this is explained by the large gaming industry located on the south shore in Nevada. Accommodation and food services provide the greatest number of positions in Incline, El Dorado, and Placer CCDs. The most diversified economy in the LTR is Incline Village CCD, meaning that employment by industry is more evenly distributed across industries in Incline CCD than in other CCDs.

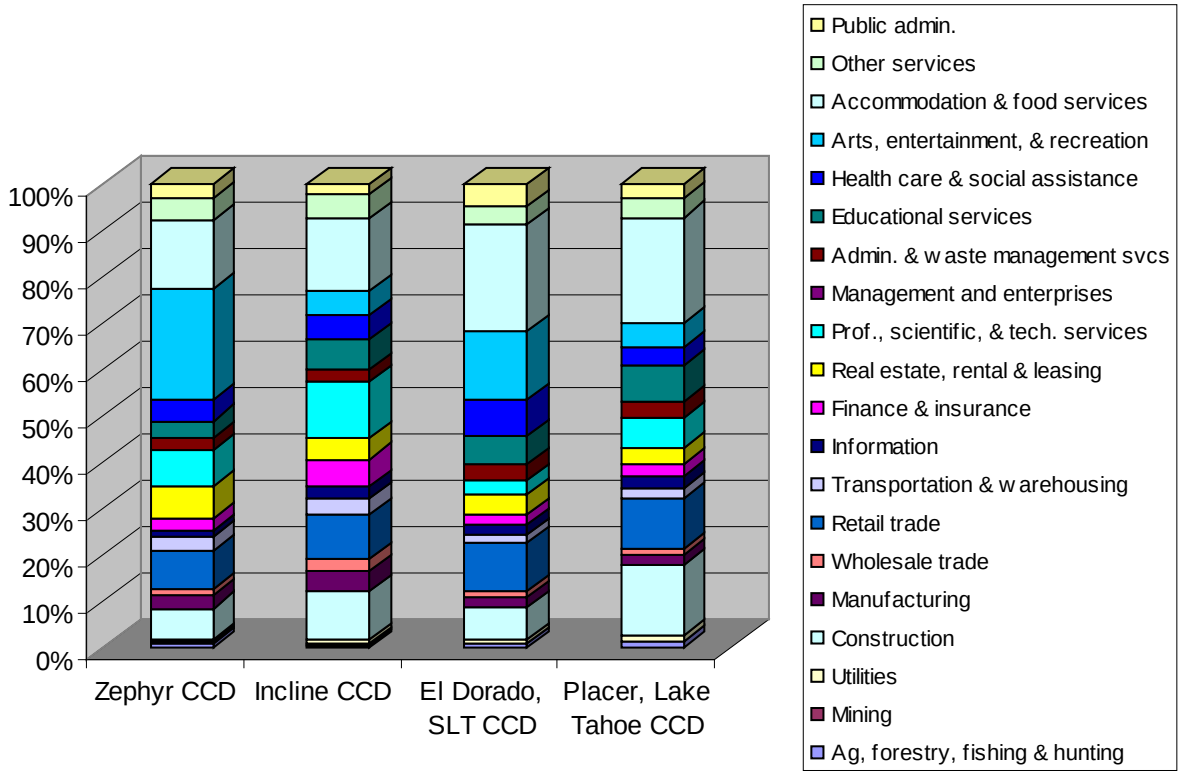

Figure F 21. Employment Distribution by Industry (NAICS), 2000. Lake Tahoe Region by CCD

Figure F22 illustrates the unemployment rates for California, Nevada, the Greater Lake Tahoe Area, and the Lake Tahoe Region in 2011. The unemployment rate for the LTR was lower than the GLTA and both California and Nevada; and had the lowest unemployment rate of the four regions.

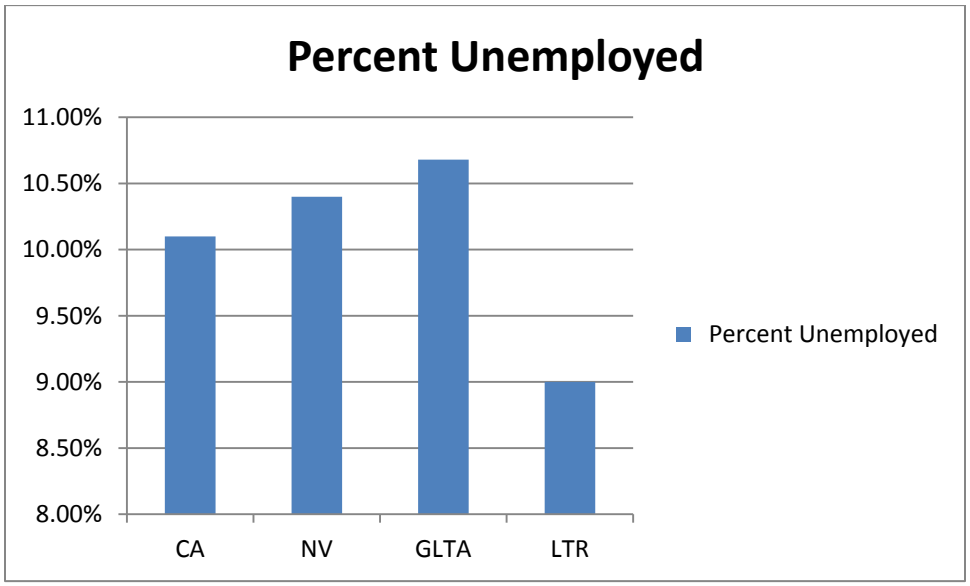

Figure F 22. Regional Unemployment, 2011

When comparing the CCDs that comprise the LTR, it appears that south shore communities had higher unemployment rates than north shore communities (Figure F 23). The higher unemployment rates on the south shore may be explained by the greater degree of employment being occupied by the arts, entertainment and recreation industries, which are subject to the seasonal influx of visitors. Employees in these industries often work seasonally.

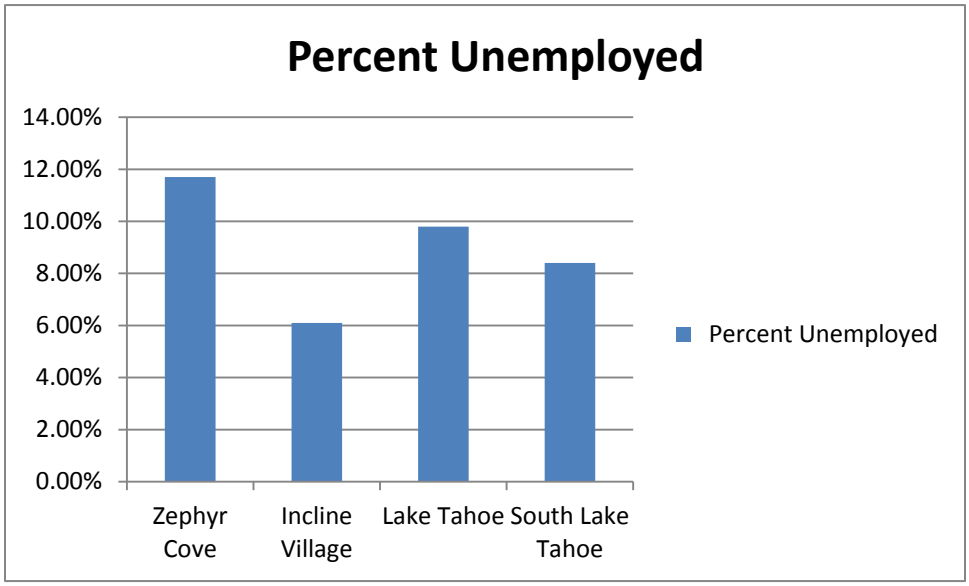

Figure F 23. Unemployment, Lake Tahoe Region CCDs, 2011

Employment Trends

Overall, employment growth in the GLTA outpaced California but lagged behind Nevada. From 1993 to 2003, total employment in the GLTA increased by 46%. Nevada outpaced the GLTA by 19%; however, the GLTA outpaced California by 26% in increased employment opportunities.

The greatest increase in positions in the GLTA was in the non-farm proprietor sector which increased by 54%. While the GLTA lagged behind Nevada's increase in the non-farm proprietor sector by 34%, the GLTA exceeded California's increase by 27%. The GLTA, Nevada, and California all experienced declining employment in the farm proprietor sector. The greatest loss was in California which declined by 7% and the smallest decline was in Nevada which declined by 4%.

While Nevada led California in increasing employment, all the Nevada counties represented in the GLTA were below the state average. The California counties were above the state average. Placer County increased employment opportunities by 74%, with the greatest percentage of the positions in wage and salary employment. Nevada County showed the largest gain from 1993 to 2003 in the non-farm proprietor sector and had the greatest number of positions in non-farm proprietor employment.

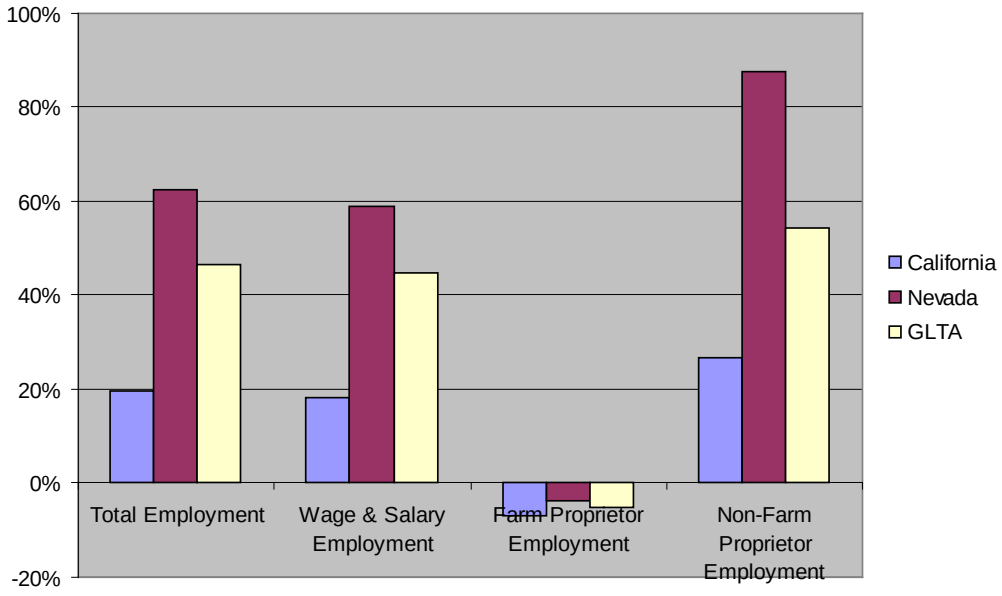

Figure F 24. Trends in Employment by Labor Sector, Regional, 1993-2003.

From 2003 to 2006, employment by industry in the GLTA was relatively stable (Figure F25). Construction lead in growth, increasing employment by 1.64%, and accommodation and food services, which declined in total share of employment by 0.8%, accounted for the greatest decline in the GLTA.

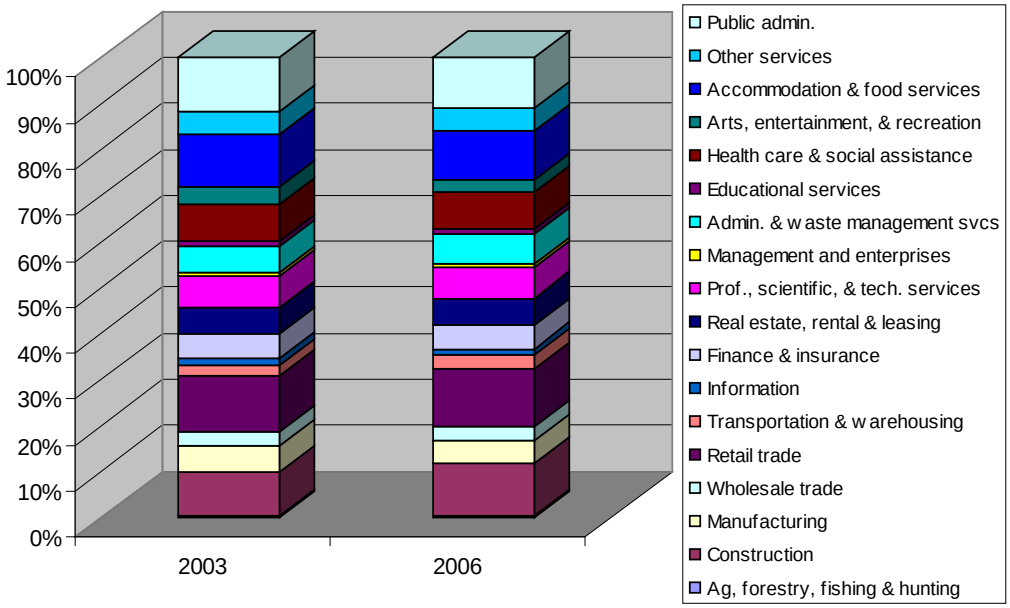

Figure F 25. Trends in Employment by Industry, Greater Lake Tahoe Region, 2003-2006

Between 2000 and 2006, the Lake Tahoe Region's employment by industry was more volatile than the GLTA (Figure F26). Public administration grew by 8%, followed closely by accommodation and food services at 7% and real estate at 6%. Industries that exhibited a decline in share of employment are the arts, entertainment, and recreation sector, which declined by 4% and the construction sector, which declined by 3%.

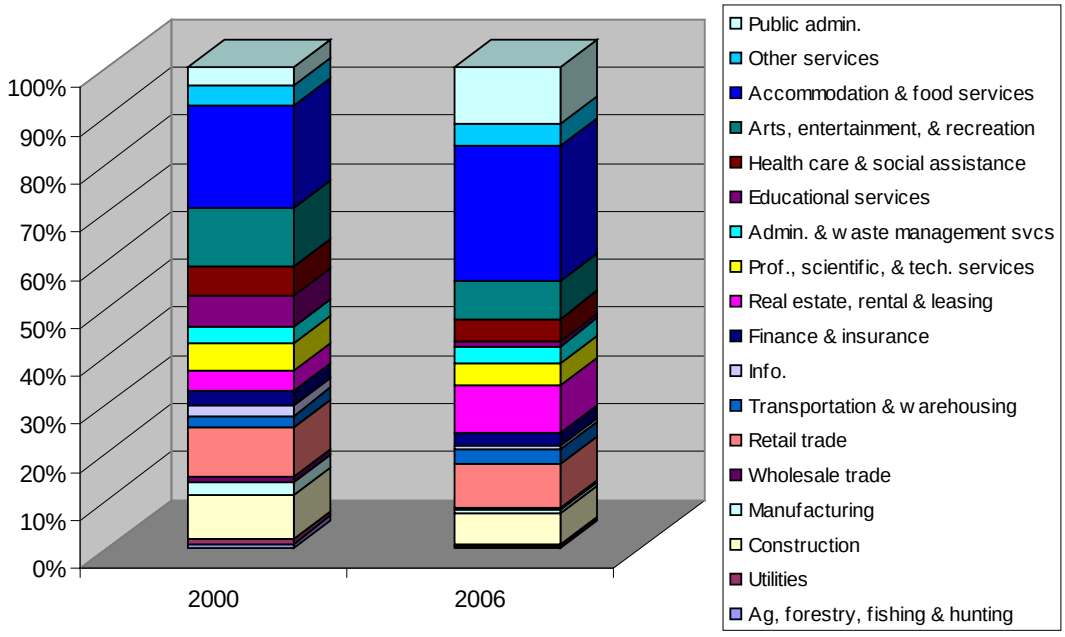

Figure F 26. Trends in Employment by Industry, Lake Tahoe Region, 2000-2006

Figure F 27 illustrates trends in regional unemployment rates from 1990 to 2000. In both the GLTA and the LTR, unemployment rates fell over the 10-year period, while in Nevada the unemployment rate stayed the same and in California unemployment rose during the same period.

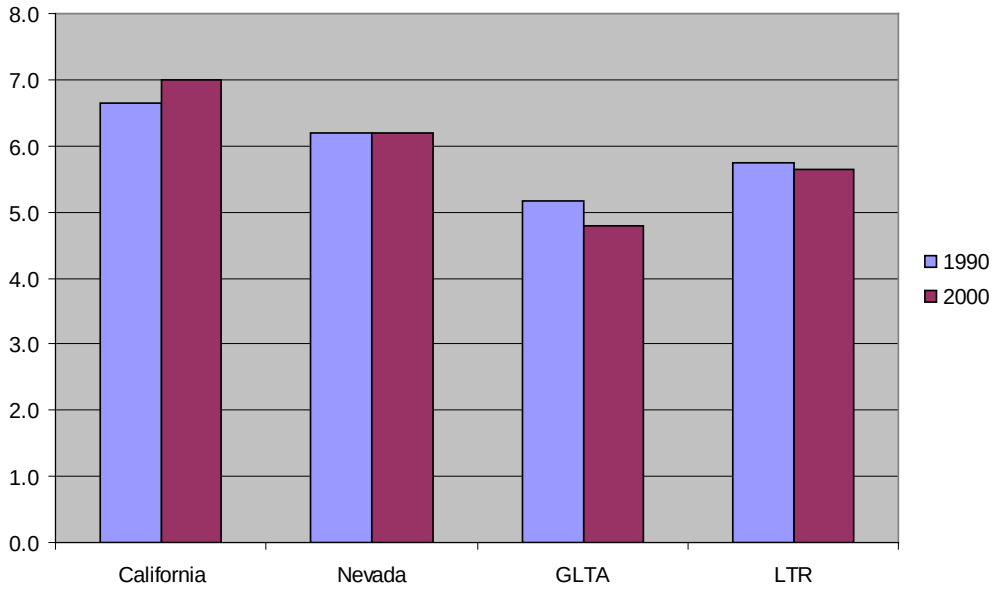

Figure F 27. Trends in Unemployment Rates, Regional, 1990 - 2000

Figure F28 shows that unemployment rates fell in all CCDs but the Zephyr Cove CCD, which in 1990 had the lowest unemployment rate of the CCDs but by 2000 had the highest.

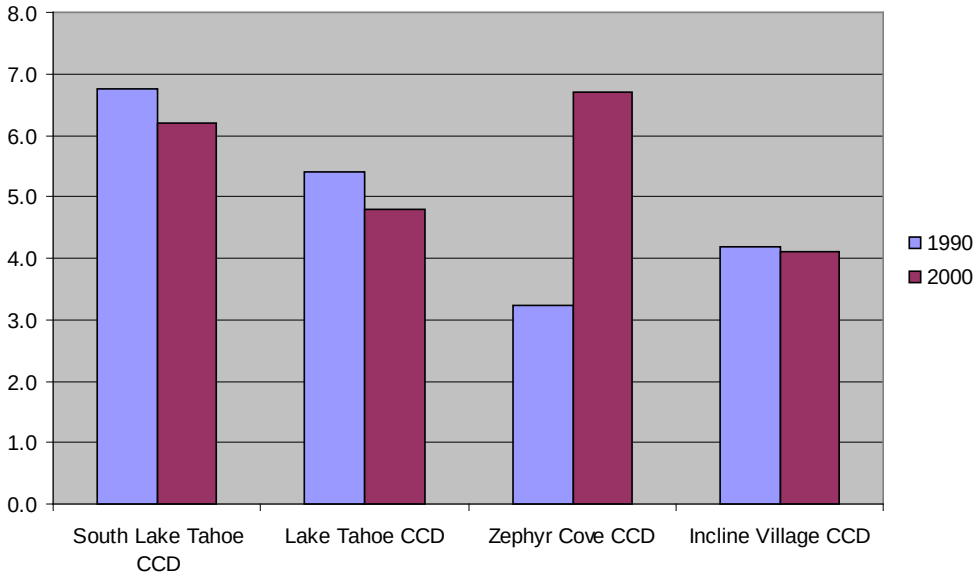

Figure F 28. Trends in Unemployment Rates, Lake Tahoe Region, 1990- 2000

Income

Current Condition

Public administration, followed by construction, then health care and social assistance provided the greatest amount of income by industry in the GLTA in 2003 (Figure F29). Within the Lake Tahoe Region in 2006, the accommodation and food services accounted for the greatest share of labor income, followed closely by government (Figure F30).

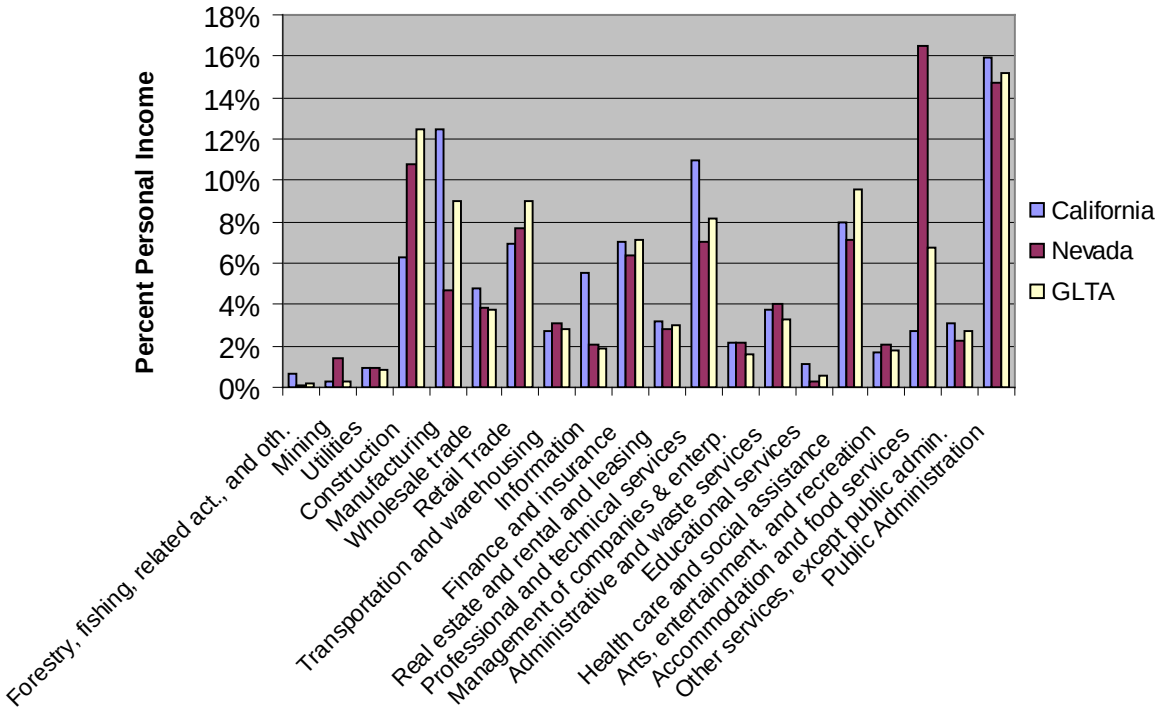

Figure F 29. Income by Industry, Regional, 2003

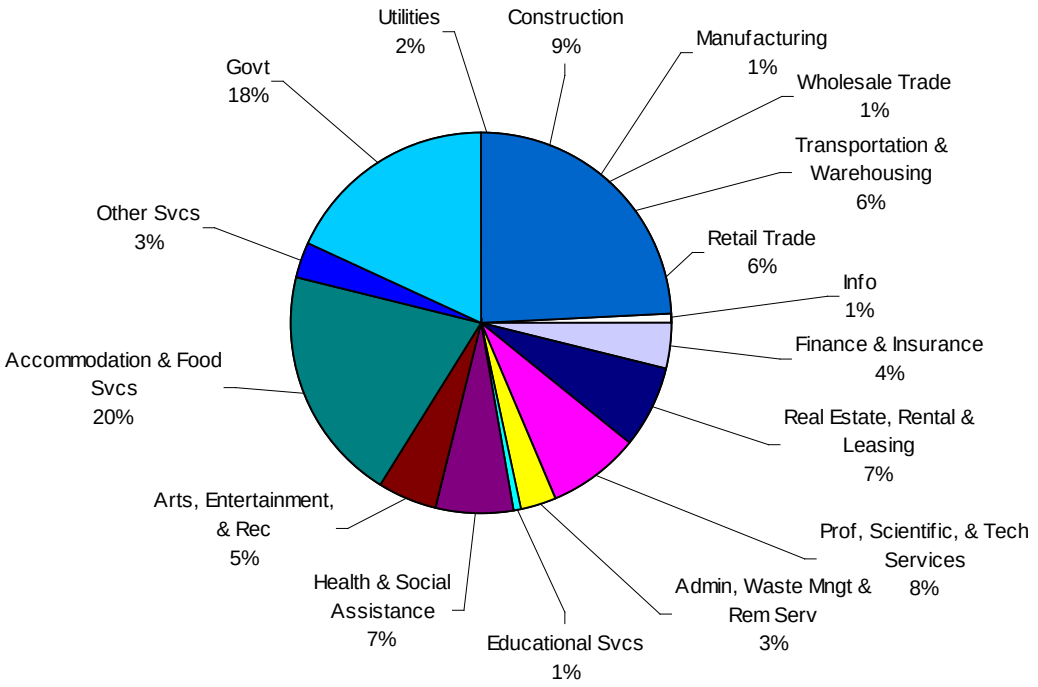

Figure F 30. Labor Income by Industry Sector, Lake Tahoe Region, 2006

The GLTA differed from California and Nevada by having a greater share of income derived from dividends, interest, and rent than the two states, and a lesser share of personal income coming from wage and salary disbursements.

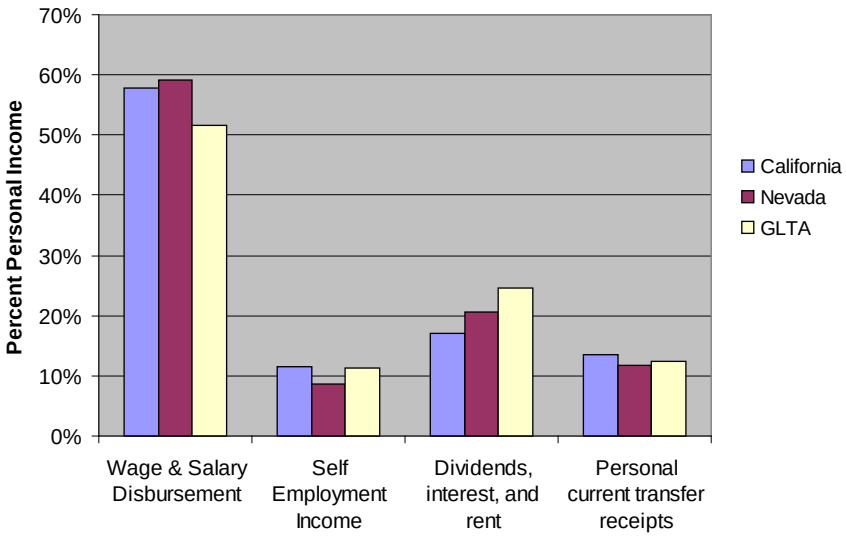

Figure F 31. Income by Labor Sector, Regional, 2003

Income derived from the wage or salary income labor sector was the dominant source of income across all communities in the Lake Tahoe Region. On average, LTR communities in California derived 69% of personal income from wage and salary positions, compared to Nevada LTR communities where 52% of personal income was from wage and salary positions. In turn, 28% of

personal income in Nevada LTR communities was earned through interest, dividends, or net rental income, while in California this sector only accounted for 8% of personal income.

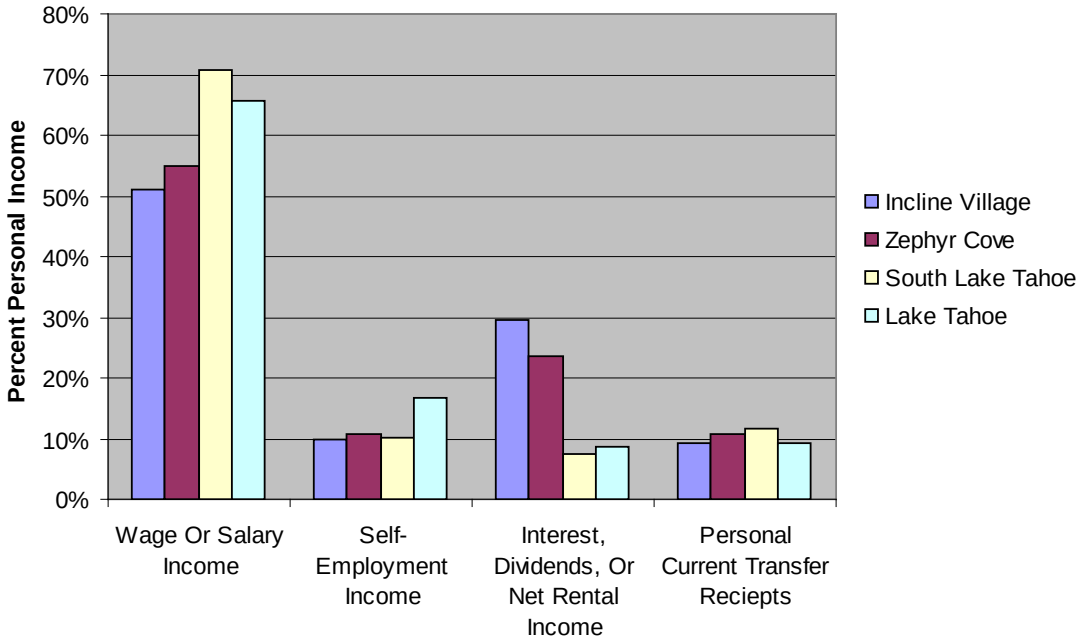

Figure F 32. Income by Labor Sector, Lake Tahoe Region CCDs, 2003

Trends

Of the four labor sectors, wage and salary positions grew the fastest in the GLTA. For both Nevada and California, the fastest growing labor sector was self-employment.

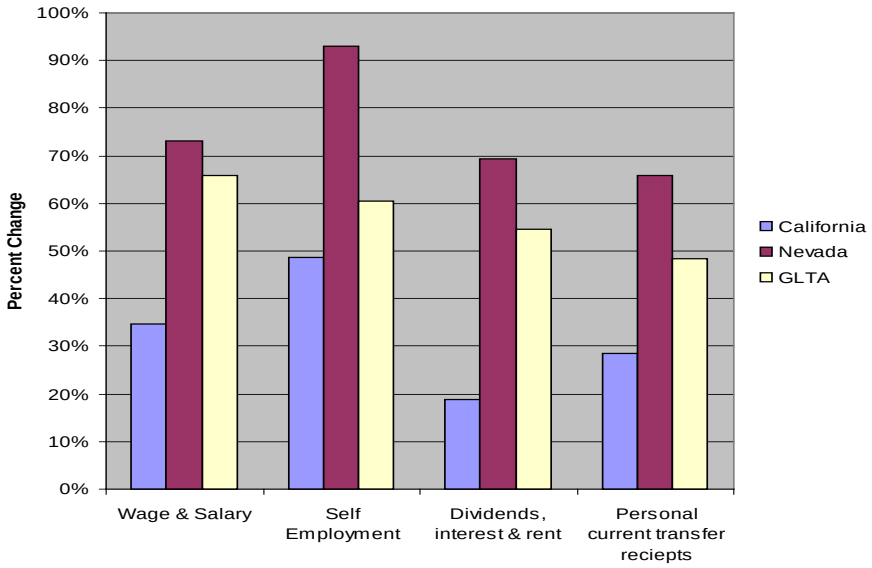

Figure F 33. Percent Change in Personal Income by Labor Sector, Regional, 1993-2003

Discussion

Although accommodation and food services occupy more than a quarter of the employment opportunities in the Lake Tahoe Region (Figure F26), they represent only one fifth of the labor income (Figure F30), which means that the greatest portion of employment opportunities in the Lake Tahoe Region are low paying positions. In contrast, the second largest industry sector by employment is government, which occupies 15% of the employment opportunities and provides 18% of the labor income. Figure F34 illustrates the relationship between industry sectors in the Lake Tahoe Region and whether each sector's employment proportion is higher or lower than the proportion of wages.

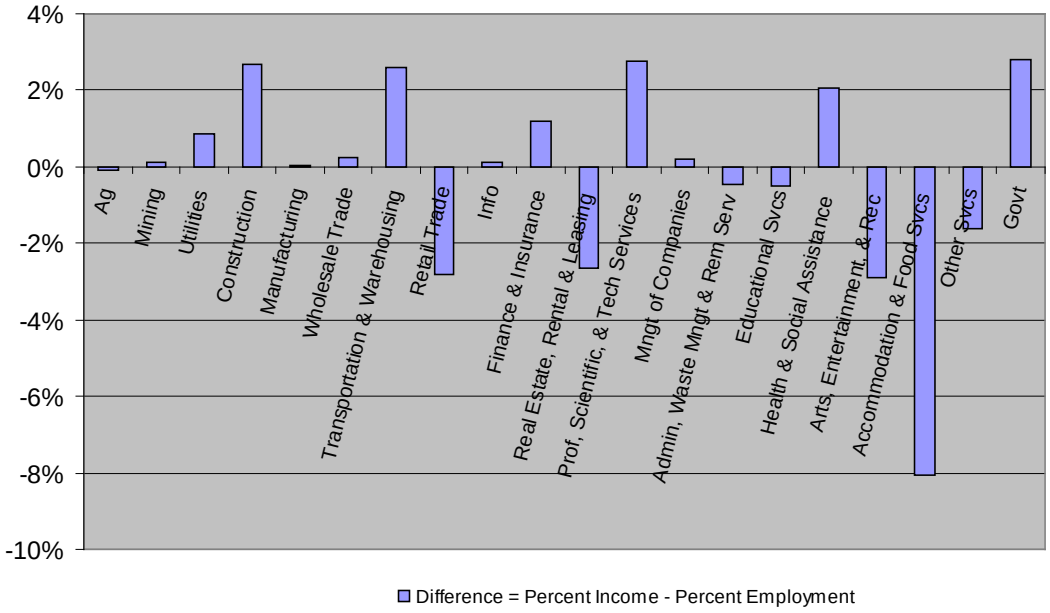

Figure F 34. Relative Income by Industry, Lake Tahoe Region, 2006

Unit Economic Contribution Analysis

Methodology

An economic contribution analysis depicts the Forest Service's contribution to the local and regional economy. An economic contribution analysis differs from an impact analysis in that it does not report the economy-wide effects of some anticipated change but rather provides a snapshot of all the income, jobs and industries in an area that are related to National Forest resource management. Where an impact analysis may focus on the economic consequences of proposed alternatives, a contribution analysis provides a description of the structure, size, and dynamics of the current economy and the Forest Service's contribution to it.

Non-market benefits such as ecosystem services or social benefits are not captured in the economic contribution analysis. While non-market benefits such as carbon sequestration, scenic beauty, or opportunities for solitude are important, there is no accepted methodology on how to quantify these values. While the Forest Service does recognize the role of ecosystem services, it has yet to establish a formal policy and protocol on whether or how to quantify these values. For these reasons, non-market benefits will be captured in the Social Assessment section.

IMPLAN is the economic modeling tool created by the Forest Service in cooperation with the Federal Emergency Management Agency and the Bureau of Land Management that was used to estimate the Forest's contribution to the local economy. Originally developed to assist land managers in planning, IMPLAN has since been privatized and is currently run by the Minnesota IMPLAN Group (MIG). IMPLAN models the economic stimulus, i.e., the labor and income generated among 509 economic sectors identified in the North American Industrial Classification System (NAICS) within the study area. The economic sectors were aggregated by the first two digits of their classification number for report purposes to produce twenty aggregate sectors.

Study Area

One of the most important decisions to be made in this type of analysis is the definition of a study area based on a functional local economy. The model built for the LTBMU is based on zip codes which concentrate on the physical boundary of the Basin. This determination is driven by the issues raised by the public and resource managers. The Lake Tahoe region is well defined by the mountain ridges around the lake.

The zip codes listed in Table F3 were used to model the "Lake Tahoe Region" economy.

Table F 3. Zip Codes for Economic Analysis for the Lake Tahoe Region

State	County	Zip Code	City/Town
NV	Washoe	89402	Crystal Bay, NV
NV	Douglas	89413	Glenbrook, NV
NV	Douglas	89448	Zephyr Cove, NV
NV	Douglas	89449	Stateline, NV
NV	Washoe	89450	Incline Village, NV
NV	Washoe	89451	Incline Village, NV
NV	Washoe	89452	Incline Village, NV
NV	Carson City	89703	Carson City, NV
CA	Placer	96140	Carnellian Bay, CA
CA	Placer	96141	Homewood, CA
CA	El Dorado	96142	Tahoma, CA
CA	Placer	96143	Kings Beach, CA
CA	Placer	96145	Tahoe City, CA
CA	Placer	96146	Olympic Valley, CA
CA	Placer	96148	Tahoe Vista, CA
CA	El Dorado	96150	South Lake Tahoe, CA
CA	El Dorado	96151	South Lake Tahoe, CA
CA	El Dorado	96152	South Lake Tahoe, CA
CA	El Dorado	96154	South Lake Tahoe, CA
CA	El Dorado	96155	South Lake Tahoe, CA
CA	El Dorado	96156	South Lake Tahoe, CA
CA	El Dorado	96157	South Lake Tahoe, CA
CA	El Dorado	96158	South Lake Tahoe, CA

Once the base economic model was built with IMPLAN, the following 'Response Coefficients', or rates of economic activity, were estimated.

Recreation: The local economic stimulus for every million dollars of non-local visitor expenditures while visiting the LTBMU.

Wildlife and Fish: The local economic stimulus for every million dollars of non-local visitor expenditures related to hunting, fishing, and wildlife watching while visiting the LTBMU.

Ecosystem Restoration: The acres of mechanical thinning and small openings created for ecosystem restoration.

Forest Service Expenditures: The local economic stimulus for every million dollars of salary and non-salary expenditures to carry out recreation management activities on the LTBMU.

The response coefficients were then imported into "FEAST", an economic analysis tool developed for forest planning, along with baseline economic data and resource data to generate the economic contribution report. The following data on forest related activities and management were used to support the development of the report.

Recreation and Wildlife and Fish

Annual visitors to the LTBMU by activity and by origin (local or non-local) from the National Visitor Use Monitoring (NVUM) survey for the Lake Tahoe Basin Management Unit, 2007.

Expenditure profiles from NVUM (Stynes and White 2007) by activity (including wildlife and fish), type of use (overnight or day use) and by residence (local or non-local).

Forest Service Expenditures

Annual budget expenditures including salary and non-salary expenditures from fiscal year 2008 (October 2007 to September 2008).

Base funding, congressionally-allocated funds

Southern Nevada Public Land Management Act funds

Environmental Improvement Project funding

Erosion control grant funds administered by the LTBMU

LTBMU-related employment and labor income describes the "direct", "indirect" and "induced" economic effects derived from expenditures associated with management activities. A "direct" effect is sales of goods and services by local businesses to National Forest visitors or to the LTBMU. The local purchase of goods and services by directly affected businesses for production purposes is referred to as the "indirect" effect. The local expenditure of income by employees and proprietors of directly and indirectly affected firms is referred to as an "induced" effect.

For example, a visitor who comes to the Lake Tahoe basin for the primary purpose of recreating on National Forest lands may also purchase accommodations off the forest. This would be a direct effect. Supplies purchased by the hotel to provide that hotel room would represent an indirect effect, and the employees of the hotel who spend their wage on groceries generates an induced effect. Induced and indirect impacts are also referred to as secondary, or ripple, effects. Secondary effects in the local economy can also be described as recirculated monies.

The more times money is circulated within the local economy before it “leaks” out, the greater the economic benefit is to the local economy in terms of income and employment. Leakage refers to when monies are spent outside of the local economy. How effective a community is in increasing the number of times a dollar is recirculated in the local economy is largely affected by the degree of economic diversity. The rate of spending and respending of money in an economy is called the “multiplier effect.”

In estimating the LTBMU’s economic contribution, it is important to note that when considering the economic contribution of recreation visitors, only non-local visitor expenditures are assessed in Table F4. This is not to say that spending behaviors by local recreationists do not influence the economic vitality of the area, but rather the “substitution effect” is unknown. Substitution effect refers to how spending behaviors would be affected if the LTBMU did not exist. It is conceivable that the local recreationists would find similar local recreation opportunities and their spending behavior would remain the same. In addition, expenditures by locals do not introduce “new money” into the economy.

Current Conditions of Forest Economic Contribution

Table F5 describes the LTBMU’s contribution to the Lake Tahoe Basin area as measured by jobs and labor income by industry sector. Note that “Jobs” is average annual employment and includes a combination of full and part time, temporary, and seasonal workers. “Labor Income” is the sum of employee compensation (the value of wages and benefits) and proprietor’s income. The numbers in the “LTBMU-related” columns are Total Effects – direct effects plus the ripple (secondary) effects in the local economy.

Table F 4. LTBMU Economic Contribution to Lake Tahoe Region (2008)

	Employment (jobs)		Labor Income (Thousands of 2010 dollars)	
Industry	**Area Totals**	**FS-Related**	**Area Totals**	**FS-Related**
Agriculture	54	54	$2,070	$1,751
Mining	51	6	$2,261	$277
Utilities	199	4	$23,685	$620
Construction	3,287	27	$200,103	$1,588
Manufacturing	242	69	$14,983	$1,979
Wholesale Trade	329	81	$24,169	$6,236
Transportation & Warehousing	654	66	$27,195	$2,842
Retail Trade	3,563	385	$115,344	$14,799
Information	411	32	$26,545	$2,044
Finance & Insurance	2,382	50	$74,893	$2,281
Real Estate & Rental & Leasing	7,594	89	$107,985	$1,592
Prof, Scientific, & Tech Services	3,316	160	$178,494	$7,437
Mngt of Companies	156	16	$18,573	$1,881
Admin, Waste Mngt & Rem Serv	2,189	82	$78,082	$2,717
Educational Services	681	20	$15,962	$726
Health Care & Social Assistance	3,748	95	$239,840	$10,931
Arts, Entertainment, and Rec	2,816	320	$88,447	$10,649
Accommodation & Food Services	10,167	1,784	$316,644	$54,786
Other Services	3,150	77	$125,385	$4,244
Government	7,623	175	$498,144	$14,343
Total	**52,612**	**3,593**	**$2,178,808**	**$143,722**
FS as Percent of Total	**---**	**6.83%**	**---**	**6.60%**

The LTBMU's contribution to employment in the LTR by program area by alternative is shown in Table F5. Of the Forest Service programs, the greatest economic stimulus to the GLTA and LTA's economy is due to the recreation program. Note: The row titled "Forest Service Expenditures" is

the only place government employment for program planning and administration is counted. Employment in all other rows counts only private sector jobs.

Table F 5. Employment by Program Area for the Lake Tahoe Region

	Total Number	of Jobs	Contributed	
Resource	**Alternative A (Current)**	**Alternative B**	**Alternative C**	**Alternative D**
Recreation: non-local only	3,166	3,324	3,641	2,691
Wildlife and Fish: non-local only	87	92	100	74
Grazing	0	0	0	0
Timber	0	0	0	0
Minerals	0	0	0	0
Ecosystem Restoration	50	50	50	50
Payments to States/Counties	31	31	31	31
Forest Service Expenditures	258	258	258	258
Total Forest Management	3,593	3,755	4,081	3,105
Percent Change from Current	---	4.5%	13.6%	-13.6%

Discussion

Susan Winter, economist and economic modeler with the Forest Service's Planning Analysis Group (PAG), performed the IMPLAN modeling for this analysis, and indicated that an economic contribution to the area of analysis of close to 4% is a large contribution in comparison with other National Forests. The typical contribution is 1 - 2%. This contribution is relatively large because the LTBMU is one of the smallest forests in the country and has the highest per acre visitor rate. As illustrated in numerous tables, the dominant industries in the LTR are related to recreation and tourism. One of the industry's most dependent on the LTBMU for economic stimulus is accommodation and food services, which, as noted in the income discussion, is dominated by low wage positions. However, the LTBMU also contributes to relatively high wage positions in its administrative capacity related to the Southern Nevada Public Land Management Act. In addition, the LTBMU receives and administers, on average, $37.5 million in federal funding annually to support environmental improvement projects, which contributes to a large share of the employment and income being related to the government sector.

Table F 6. Risk Assessment

Current Condition	Risks	Effects on Management
The Lake Tahoe Region is highly dependent on tourism. The greatest contribution by the LTBMU is in tourism related industries.	The Lake Tahoe Region is highly vulnerable to national social, economic, political, and environmental conditions that affect travel and tourism.	Diversify economic opportunities by coordinating with local, county, and state jurisdictions, and economic development organizations to identify and develop small-scale industries dependent on non-timber forest products.
The second greatest contribution of the LTBMU in the LTR is from government expenditures on salary and non-salary items. Much of the operating budget comes from SNPLMA, whose funds are guaranteed through 2012.	There is a great level of uncertainty about what the funding level from SNPLMA will be after 2012. This could translate into a considerably sizable loss of jobs and labor income.	Eventually the SNPLMA funding will run out, likely in the first decade of the revised plan. The budget is expected to drop by around half.
The LTBMU's largest contribution to employment and labor income is in low wage positions.	Wages cannot support cost of living for many local employees. Creates community instability.	Create tourism related economic opportunities for small owner-operated businesses that pay higher wages. Increase outfitter and guiding permittee opportunities.

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Appendix G: Timber Suitability Analysis

Lands Generally Not Available for Timber Harvest (sec. 62.1)

The first task was to find lands that are generally not available for timber harvests or where timber harvest is not permissive. These lands include area removed from availability due to national designation, such as Wilderness Areas or Research Natural Areas. On the LTBMU, there are three Wilderness Areas (Desolation, Mount Rose, and Granite Chief) and one Research Natural Area (Grass Lake). Also included in this acreage are vegetation types identified as not capable of producing harvestable timber such as barren rock, water, shrub-lands, meadows, and some sub-alpine types. All the remaining acres where considered available for potentially treatments that could involve timber harvests. This resulted in approximately 103,000 acres out 154,000 acres where timber related treatments could be utilized even if the objective was not timber production.

Lands Suitable for Timber Production (sec. 62.21)

There are no lands on LTBMU where timber "production" is either a primary or even a secondary objective or goal. However, timber output or harvest can be a by-product or derivative from an integrated vegetative treatment where the objective are other than timber production and timber harvest or removal is not explicitly forbidden in the forest plan. Timber output is an incidental product from prescription that had other purposes and timber harvest is seen as a "tool" for accomplishing other objectives such as restoration and fuels hazard reduction. There is no intent of producing a sustainable timber harvest over time on any lands in the basin. Therefore, there are no acres of lands suitable for timber production [3.a in the table above].

Other Lands Where Trees May Be Harvested for Multiple Use Values Other Than Timber Production (sec. 62.22)

These are lands where achieving desired conditions or resource objectives is not compatible with sustainable timber production, but timber harvest can be used as a tool to achieve other multiple-use purposes. Examples of the reasons that timber harvest could occur on lands where achieving desired conditions or resources objectives is not compatible with timber production may include, but is not limited to:

- Timber harvest to meet healthy forest and hazardous fuels objectives as part of community wildfire protection plans.
- Maintaining or recruiting mature forest characteristics in areas where final regeneration of a stand is not planned.
- Restoring meadow or riparian ecosystems being replaced by forest succession.
- Cutting trees to promote the safety of forest users. This includes hazard tree removal in campgrounds, picnic grounds, and administrative sites, and along roads and trails open to public travel.
- Timber harvest to meet early seral habitat objectives for wildlife
- Timber harvest to meet scenic objectives that may include viewing areas or that increases scenic quality and integrity of an area.

Other Land Generally Suitable for Timber Harvest (sec. 62.22)

These are lands where achieving desired conditions or resource objectives is not compatible with timber production, but timber harvest can be used to achieve other multiple-use purposes. In some areas, achieving the resource objectives and desired conditions of vegetation may make it difficult to provide timber products on a planned and reasonably predictable basis, yet timber harvest may be an important tool to restore or maintain those desired conditions. Examples of the reasons that timber harvest could occur on lands where achieving desired conditions or resources objectives is not compatible with timber production may include, but is not limited to:

1. Maintaining or recruiting mature forest characteristics in areas where final regeneration of a stand is not planned.
2. Restoring meadow or riparian ecosystems being replaced by forest succession.
3. Cutting trees to promote the safety of forest users. This includes hazard tree removal in campgrounds, picnic grounds, and administrative sites, and along roads and trails open to public travel.
4. Timber harvest to meet early seral habitat objectives for wildlife
5. Timber harvest to meet healthy forest and hazardous fuels objectives as part of community wildfire protection plans.
6. Timber harvest to meet scenic objectives that may include viewing areas or that increases scenic quality and integrity of an area.

A map showing the layout of the suitable vegetation types and unavailable areas within the LTBMU is displayed in Figure G1:

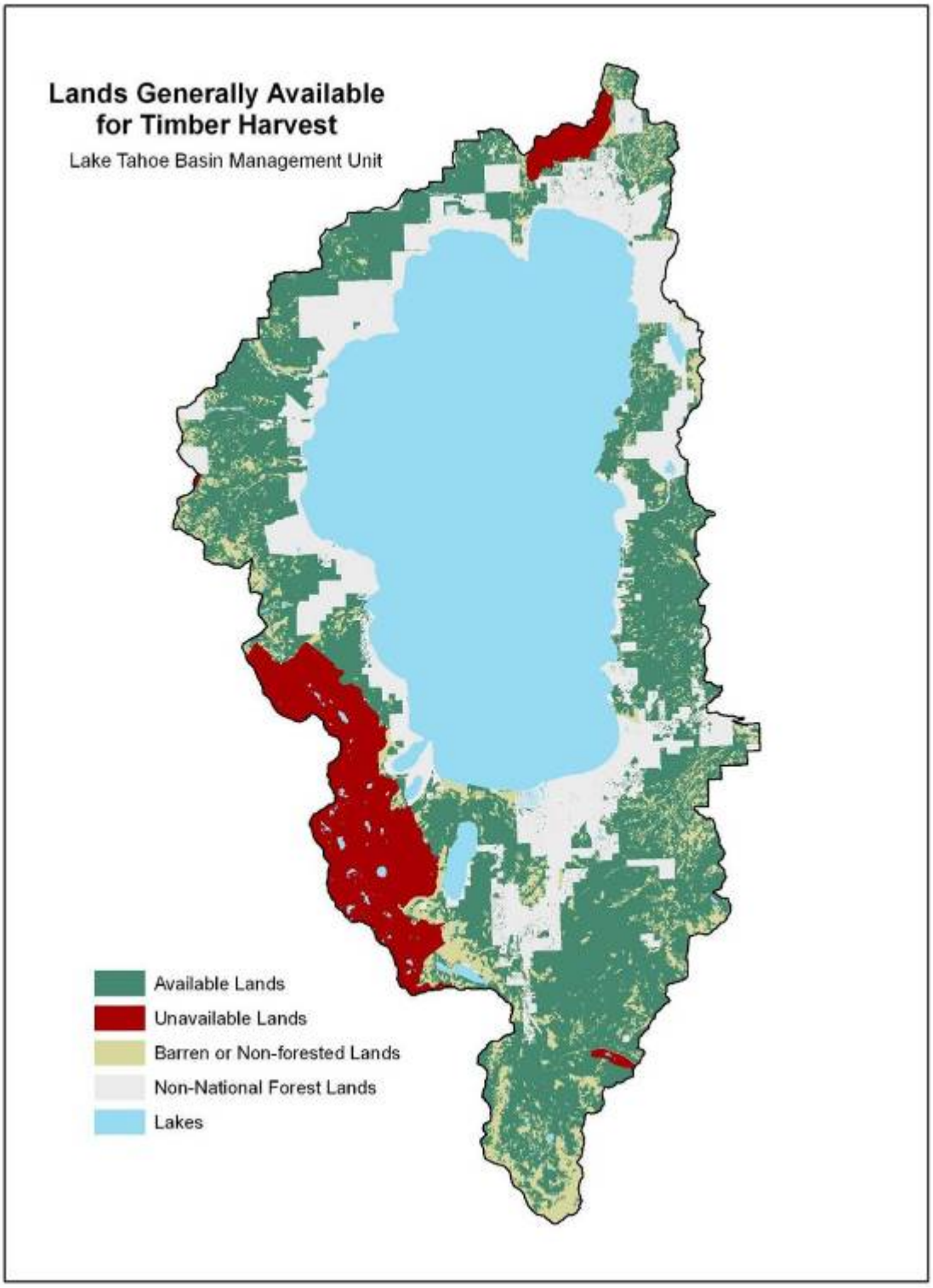

Figure G 1. Lands Generally Available for Timber Harvest Map

Timber Sale Program Quantity (TSPQ) and Long-Term Sustained-Yield Capacity (LTSYC) (sec. 65.3)

Forest Health and Hazardous Fuels Reduction

Over the next 10 to 20 years, the LTBMU will continue to emphasize forest health and hazardous fuels reduction according to the Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy. This strategy prioritizes vegetation and fuels treatments in the Wildland Urban Intermix zones as identified in Community Wildfire Protection Plans. The primary goals of this emphasis are to improve the resiliency of forested ecosystems to disturbance events such as wildfires, wind and storm events, and insect and disease outbreaks, including the management of forest vegetation to protect communities from losses associated with these disturbance events.

Wildlife/Fisheries

Harvesting forest vegetation will serve to improve habitat conditions for terrestrial or aquatic animal species, including threatened, endangered, and sensitive species and communities.

Recreation/Scenery

Harvesting forest vegetation will serve to maintain or improve the recreational experience of forest visitors, including the management of fore vegetation to maintain or improve scenic resources.

Table G 1. LTBMU Timber Sale Program Quantity (by Practice)

65.5 - Exhibit 03

Timber Sale Program Quantity [1]

(Annual Average Volume Outputs for First Decade)

Practice	Timber Sale Program Quantity (TSPQ) By Management Emphasis [2]						
Lands Suitable for Timber Production	**Timber Prod.**	**Water Yield**	**Wildlife/ Fisheries**	**Recreation/ Scenery**	**Fire/Fuels/ Forest Health**	**Other**	**Totals**
Regeneration Cutting (even- or two-aged)	-						
Uneven-aged Management							
Intermediate Harvest							
Commercial Thinning							
Salvage/Sanitation							
Other Harvest Cutting							
Subtotal, Sawtimber (MMBF)							
Subtotal, All Products (MMCF)							
Other Lands [3]		Water Yield	Wildlife/ Fisheries	Recreation/ Scenery	Fire/Fuels/ Forest Health	Other	Totals
Regeneration Cutting (even- or two-aged)							
Uneven-aged Management							
Intermediate Harvest							
Commercial Thinning					2.0		2.0
Salvage/Sanitation					0.5		0.5
Other Harvest Cutting							
Subtotal, Sawtimber (MMBF)					2.5		2.5
Subtotal, All Products (MMCF)					6.5		6.5
Grand Totals - Sawtimber (MMBF)					2.5		2.5
Grand Totals, All Products (MMCF)					6.5		6.5

Notes:

All products includes Sawtimber plus other products such as biomass and fuelwood

1 To be expressed to nearest 0.1 million cubic feet (MMCF). Use local conversion ratios for BF/CF conversions.

2 See exhibit 01 for primary management emphasis category definitions.

3 Other lands where trees may be harvested for multiple use values other than timber production as described in section 62.22.

MMBF – One million board feet

The TSQP is displayed in the tables and charts below. They are projected for 10-decades and displayed as average annual amounts. Outputs are shown for both green sawlogs greater than 9.9-inch to a utilizable top and for the total, which includes other products that have been converted to MBF or CF along with the sawtimber. Tables are in both board feet and cubic feet.

The Yields are based on treating approximately 3,500 acres [single foot print] in the first decade based on a combination of initial and maintenance treatments. This amount is projected to increase to about 6,000-7,000 acres in the future as additional activities are needed to move the LTBMU toward its desired condition for forest health by the addition of more restoration treatments along with those needed to reduce risk of catastrophic fire in the WUI.

The LTSYC was derived by estimating the amount of treatments needed to maintain the forestlands at its desired condition once the unit reaches that state. Active management is needed to restore and maintain the Basin forestland at its desired condition. This is due to the need to continue fire suppression throughout the unit with the exception of a few small areas in which natural wildfire might be allowed to burn, e.g., Desolation Wilderness or Grass Lake Research Natural Area.

Table G 2. LTBMU Long-Term Sustained Yield Capacity by Vegetation Type

mmcf/year average Decade	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
TSQP/yr [gsl]-mmbf	2.5	3.0	3.1	3.5	3.6	3.5	3.4	3.3	3.3	3.3
TSQP/yr [all products]	3.3	3.9	4.0	4.6	4.7	4.6	4.3	4.4	4.5	4.7
LTSY/Yr	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
mmcf/year average Decade	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
TSQP/yr [gsl] mmcf	5.0	6.0	6.2	7.0	7.2	7.0	6.8	6.6	6.6	6.6
TSQP/yr [all products]	6.5	7.8	8.1	9.1	9.4	9.1	8.8	9.0	9.2	9.6
LTSY/Yr [Sawtimber Only]	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8

Notes: TSPQ– Timber Sale Program Quantity; LTSYC– Long-Term Sustained-Yield Capacity

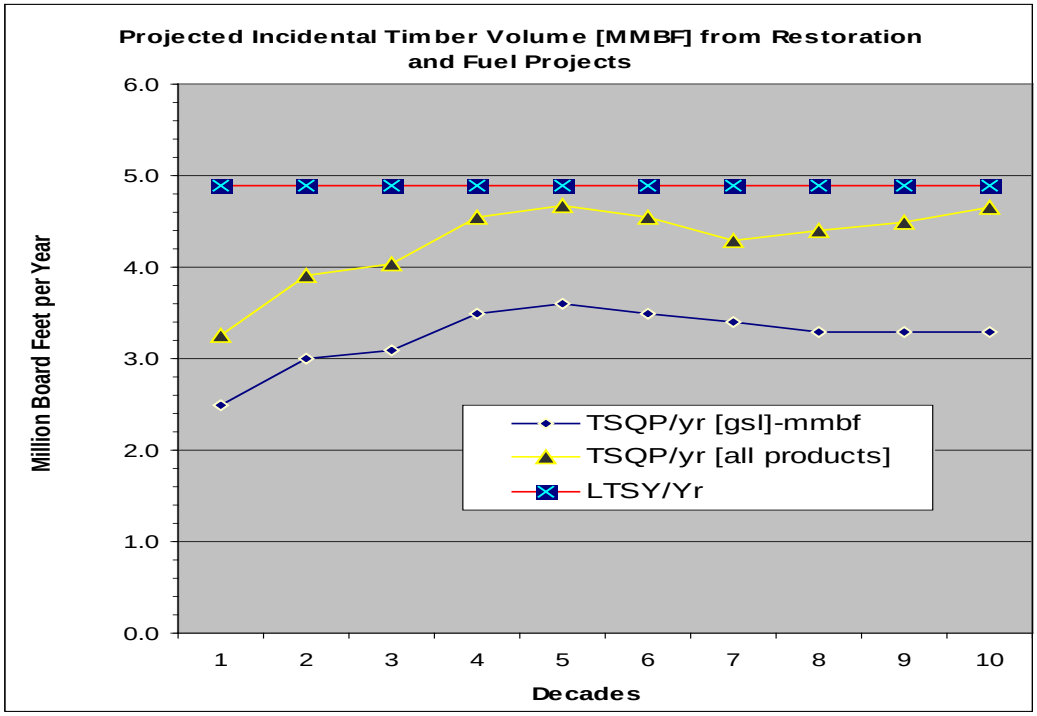

Figure G 2. Projected Incidental Timber Volume (MMBF)

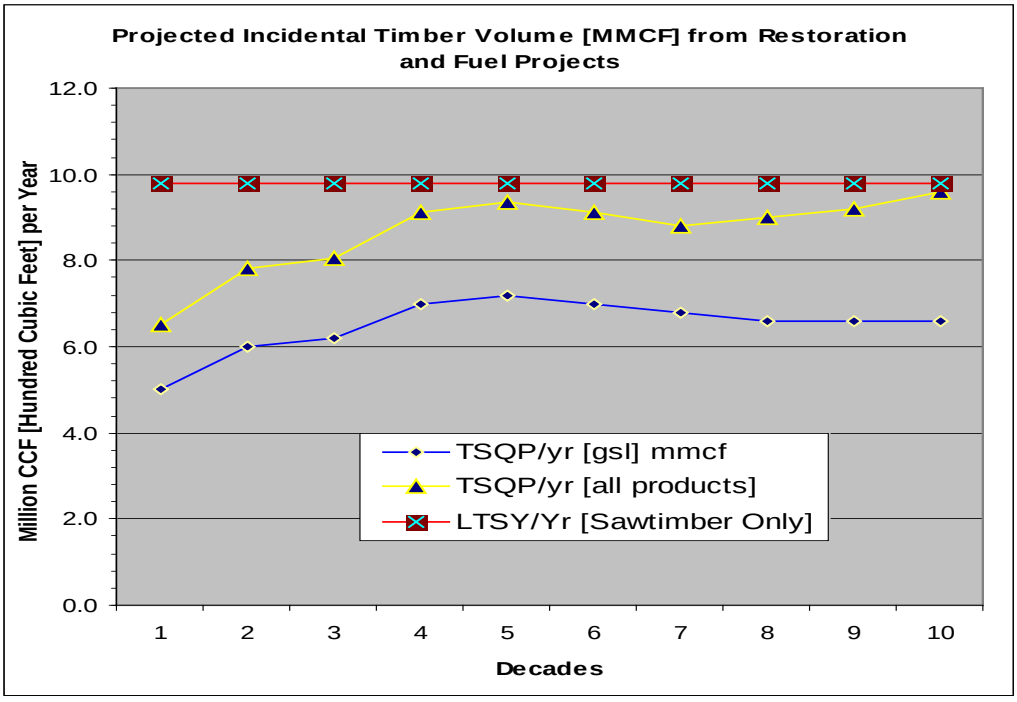

Figure G 3. Projected Incidental Timber Volume (MMCF)

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Appendix H: Comparison of Alternatives by Management Strategy

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Physical Resources Program					
Air Quality					
Utilize smoke dispersion models for prescribed fire projects greater than 250 acres.	X	X	X	X	X
Wherever feasible, apply Emission Reduction Techniques (ERTs) to reduce emissions and control greenhouse gas emissions from burn activities on NFS lands. Consider non-burning alternatives in addition to ERTs wherever possible to reduce and prevent smoke intrusion into communities. Manage emissions from on-forest activities to avoid elevating ambient air concentrations to levels that result in non-attainment of standards for the Lake Tahoe Basin.	X	X	X	X	X
For Forest Service operated combustion engines, utilize alternative fuels when technically and fiscally feasible, for purposes of reducing greenhouse gas emissions and ozone precursor emissions.	X	X	X	X	X
Consider the Regional Haze State Implementation Plan targets for the Class 1 Airshed over Desolation Wilderness during project planning.	X	X	X	X	X
Water Quality and Soil Quality					
Implement PSW Region Best Management Practices to protect and conserve physical resources.	X	X	X	X	X
Manage activities within SEZs in a manner that is consistent with the protection of SEZ functions and values and protection of beneficial uses of water bodies.	X	X	X	X	X
Participate in achieving the program goals for the Integrated Water Quality Management Strategy for achievement of the Lake Tahoe TMDL.	X	X	X	X	X
Ensure that identified beneficial uses for water bodies are adequately protected. Identify the specific beneficial uses for the project area, and water quality goals from the Regional Basin Plan.	X	X	X	X	X
Disperse runoff to reduce velocity, and increase infiltration to enhance treatment of nutrients and contaminants. Stabilize soil to prevent accelerated (human-caused) erosion of topsoil and subsequent sedimentation and loss of soil productivity. Utilize NFS lands for treatment of urban runoff where appropriate.	X	X	X	X	X
Reduce the watershed impacts resulting from land coverage. Minimize the development of new hard and soft coverage from forest management activities. Seek out opportunities to reduce coverage through site design when retrofitting, improving, or rebuilding at existing developed sites.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Protect natural functioning of soil resources and sustain or improve long-term soil productivity in areas dedicated to growing vegetation. Where past management activities have reduced soil productivity below Forest Service regional or national guidelines, improve soil productivity by respreading displaced topsoil, using tillage to increase porosity, increasing nutrient supplies through the addition of appropriate amendments, or increasing nutrients and water-holding capacity through the addition of organic matter.	X	X	X	X	X
Water Use and Development					
Where feasible, arrange for and secure water rights for existing and foreseeable future Forest Service consumptive uses, including administrative, recreation, erosion control, and evaporative losses.	X	X	X	X	X
Where feasible, obtain water availability assurances for existing and foreseeable future non-consumptive uses, including minimum instream flows and reservoir level maintenance for fish, wildlife, boating, swimming, and aesthetics.	X	X	X	X	X
Manage dams to ensure adequate flows for downstream uses, including supporting aquatic habitats. Consider opportunities for removal of dams.	X	X	X	X	X
If it is not possible to determine from existing data the magnitude of potential adverse effects on the groundwater table of a groundwater development project, a geologic and geotechnical analysis should be conducted.	X	X	X	X	X
Use plants which do not require long-term irrigation in re-vegetation and landscaping projects in order to conserve water.	X	X	X	X	X
Natural Hazards					
Evaluate natural hazards before developing or permitting new uses or facilities on NFS lands.	X	X	X	X	X
Watershed Restoration					
Implement restoration projects in high priority watersheds identified by LRWQCB's total maximum daily load (TMDL) Model for Lake Tahoe, to improve self-sustaining, dynamically stable stream systems, channel stability, and hydrologic function.	X	X	X	X	X
Implement currently planned projects. New watershed restoration projects would be limited to removal of stressors, and the rate of watershed recovery would be governed by natural processes.				X	
Implement projects identified through National USFS Watershed Condition Assessment Process.	X	X	X	X	
In general, where stream characteristics are outside the natural range of variability in the area of a proposed project/activity, implement mitigation measures and short-term restoration actions to prevent further declines or cause an upward trend in conditions.	X	X	X		X
Reconnect floodplains with stream channels to enhance treatment of nutrients and contaminants, and improve channel geomorphic function to reduce in-channel sediment sources and increase in-channel sediment storage.	X	X	X		X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Design projects to maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features. Implement restoration projects to attenuate peak flows and promote water storage in SEZs.	X	X	X		X
Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species.	X	X	X		X
Identify and implement restoration actions to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species.	X	X	X		X
Design projects to maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features. During project analysis, roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths should be identified and corrective actions planned and implemented where necessary to restore connectivity	X	X	X		X
Climate Change					
Collaborate on local and regional vulnerability assessments. Participate in a Regional vulnerability assessment for the Sierra Nevada.		X	X	X	X
Incorporate vulnerability assessments related to climate change into management on the LTBMU as information is synthesized. Consider and prioritize adaptation activities recommended for vulnerable resources based on funding.		X	X		X
Consider restoration of species and/or habitat identified as vulnerable to climate change during project planning.		X	X		X
Consider restoration of individual species during habitat restoration, especially for vulnerable resources.		X	X		X
Minimize management impacts to species that are vulnerable to climate change. Reduce stress (e.g. human activities, invasive species) related to management in order to reduce the additive effects of non-climate stress.		X	X	X	X
Incorporate adaptation actions into management to increase resiliency and adaptive capacity of vulnerable resources.		X	X		X
Forest Vegetation, Fuels and Fire Management Program					
Forest Vegetation and Fuels					
Emphasize prevention in the form of silvicultural (e.g. mechanical treatments, herbicides, etc.) or prescribed fire treatments, resulting in forest stands that are less susceptible to high levels of tree mortality caused by drought, wildfires and bark beetles.		X	X		X
Emphasize use of prescribed fire, managed wildfire and hand thinning to achieve forest stands that are less susceptible to high levels of tree mortality caused by drought, wildfires and bark beetles.				X	

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Invoke specific integrated pest management strategies as needed to respond to immediate native or exotic forest insect or disease threats to forest health, which may include removal or treatment of beetle-infested trees, when identified that threaten developed recreation and administrative sites, and private property, prior to beetle emergence, to reduce the likelihood of further infestation.	X	X	X	X	X
Establish measures to prevent the establishment and spread of invasive plants during project implementation and post-disturbance rehabilitation activities.	X	X	X	X	X
Consider all available technologies and management tools and practices to meet project objectives.		X	X		X
Consider all available technologies and management tools and practices to meet project objectives, but emphasize use of prescribed fire, managed wildfire, and hand thinning.				X	
Vegetation management activities adhere to ecologically-based management strategies and are integrated, ultimately to restore or maintain forest resiliency. For example, forest vegetation treatments around communities (thinning that alters density, structure, and species composition) to restore forest resilience to wildfire also meet the goals of reducing forest stand susceptibility to bark beetle-caused tree mortality.	X	X	X	X	X
Vegetation treatments in montane forests favor Jeffrey pine, sugar pine that is white pine blister rust-resistant, and aspen, species that have become much less common over the last century due to logging and fire exclusion.	X	X	X	X	X
Reforestation strategies incorporate species mix, stocking density, or use of genetically superior or pest resistant planting stock, to restore landscapes and improve adaptability under climate change.		X	X		X
Reforestation strategies incorporate species mix, stocking density, or use of genetically superior or pest resistant planting stock, to restore landscapes.	X				X
Revegetation following a disturbance event or management activity first considers hazard tree removal, then the potential for natural regeneration of early seral vegetation, and finally, the need for artificial regeneration and corresponding competing vegetation control measures.		X	X		
Revegetation following a disturbance event or management activity first considers hazard tree removal, then the potential for natural regeneration of early seral vegetation.				X	X
Forest vegetation treatments, including aspen stand enhancements and riparian area restorations, achieve High Minimum Scenic Stability (MSS) and enhance desired scenic attributes and are applied on a project-by-project basis.		X	X		
Forest vegetation treatments, achieve High Minimum Scenic Stability (MSS) and enhance desired scenic attributes and are applied on a project-by-project basis.				X	X
When restoring disturbance regimes such as fire, many forest stands are currently too dense to allow the re-establishment of a frequent-fire regime. In these cases, management techniques such as thinning and prescribed burning are used as surrogates for wildfire and other mortality agents.	X	X	X		
Planned and unplanned ignitions are used where possible to accomplish forest health, wildlife habitat, or other ecosystem restoration objectives.	X	X	X	X	X
The majority of fuels reduction treatment efforts are concentrated in WUIs until initial WUI treatments are completed WUI maintenance treatments occur as needed.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Consistent with preserving the recreation resource, trees, tree limbs, or downed woody debris identified as hazardous at developed recreation sites are removed.	X	X	X	X	X
Projects should consider the creation of openings of varying sizes and shapes that retain reserve trees and clumps to produce spatial and structural heterogeneity in forest stands, and should give greater weight to openings from 2 to 7 acres. Forest structure should vary over the landscape in relation to topographic variables of slope, aspect, and slope position.	X	X	X	X	X
Where reforested areas (generally Pacific Southwest Region size classes 0x, 1x, 2x) are included within area treatments, consider designing treatments to also: (1) accelerate the development of key habitat and late seral characteristics, (2) increase stand heterogeneity, (3) promote hardwoods, and (4) reduce risk of loss to wildland fire.	X	X	X	X	X
Preference should be given to reducing stand density and modifying species composition through thinning treatments to prevent/reduce high levels of bark beetle-or other forest pest -caused tree mortality. Preventive measures such as thinning should be used for reducing opportunities for forest pests.	X	X	X		X
Vegetation treatments designed to restore aspen should focus on restoring dominance of aspen in the canopy; regenerating and expanding aspen stands; reducing the risk of loss of aspen stands from the landscape; and developing vigorous under-story deciduous tree, shrub, and herbaceous associations and habitats.	X	X	X	X	X
Perpetuate and promote existing late seral stages in each project area and throughout the broader landscape if feasible, with primary emphasis on protecting/enhancing late seral dependent wildlife habitat.		X	X		X
Perpetuate and promote existing late seral stages in Old Forest Emphasis Areas with primary emphasis on protecting/enhancing late seral dependent wildlife habitat.	X			X	X
Fire Management					
Maintain fire suppression capability and preparedness at a level that is appropriate to protect lives, communities, and resources. Protection of human life (firefighter and public safety) is the most important objective during a fire. Once firefighters have been assigned to a fire, their safety becomes the highest value to be protected.	X	X	X	X	X
Base fire management strategies and tactics on firefighter and public health and safety, fire cause, current and predicted weather, current and potential fire behavior, fire effects, values to be protected, post-fire tradeoffs, resource availability, cumulative effects of the fire, and cost effectiveness. Strategy and tactics may vary around a fire's perimeter.	X	X	X	X	X
Support attainment of desired conditions for fuels reduction, wildlife habitat, forest health, and ecosystem restoration contained in this Forest Plan through appropriate response to unplanned ignitions. By taking into account the location of ignition, time of year, current and expected weather and burning conditions, fire managers apply the best strategy to mitigate risks to the public and firefighters, meet protection priorities, and meet cultural/natural resource management objectives defined in this Forest Plan.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Respond to mutual threat incidents when requested under a cooperative agreement. Forest Service employees limit fire suppression actions to exterior structure protection measures as described in FSM 5137.	X	X	X	X	X
Consider use of all types of firefighting equipment in fire emergencies when there is threat to human life and property, or where resource value saved is clearly greater than the damage done through the use of such equipment. In other than these conditions, disturbance to soils, stream environment zones, and visual quality are given increased priority. Cost effectiveness of equipment used is also considered during tactical decision-making.	X	X	X	X	X
Strive to keep fire suppression costs near national historic averages for fires with similar characteristics in comparable areas.	X	X	X	X	X
Continue a Fire Prevention Program that reduces the number of human-caused fires through an aggressive program of public contact, education, outreach, and enforcement.	X	X	X	X	X
Work in cooperation with public agencies, local fire-safe councils, and private citizens to exchange information and assistance throughout all local jurisdictions.	X	X	X	X	X
Use fire retardant according to national and regional policy.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Biological Resources Program					
Conservation of Habitat and Species Diversity					
Develop a LTBMU biological (aquatic, botanical, and terrestrial) resources conservation strategy, including a five year action plan.	X	X	X	X	X
Provide for Lake Tahoe Basin-wide and Region-wide recovery actions for threatened and endangered species, and local species of interest. Develop, in partnership with other Lake Tahoe Basin entities, a basin-wide management strategy that utilizes well-supported indicators and reference conditions to assess the biological integrity and status and trend of a number of threatened and endangered species, Region 5 sensitive species, TRPA special interest species, local species of interest and priority invasive species.	X	X	X	X	X
Identify and map areas of high biological diversity, where multiple biological resources occur in the same habitat (e.g. a sensitive fish, TRPA special interest plant, and target wildlife species occur all within 200 meters of each other).	X	X	X	X	X
Collaborate with partners to establish priority locations for maintaining and restoring habitat connectivity and to expand habitat of native species.	X	X	X	X	X
Management activities should consider all levels of food web (trophic level) biodiversity (example predator/prey) during project planning and design. Maintenance of this diversity will help mitigate climate change exposure to individual species and communities (e.g. from changes in phenology and habitat shifts).		X	X		X
Management activities should consider habitat connectivity for species that may be impacted due to climate change by removing or modifying physical impediments to movements		X	X		X
Aquatic Habitats and Species					
Maintain, enhance, or restore the physical and biological characteristics of aquatic ecosystems.	X	X	X	X	X
Minimize human disturbance that would degrade wetland function and processes.		X	X		X
Provide for hydrologic and geomorphic processes, such as allowing flood events and associated bedload to pass downstream while providing for maintenance of stream pattern, profile and dimension.		X	X		X
Allow stream channels to adjust to reigning climate and natural processes.				X	
Provide a renewable supply of large downed logs that: (1) can reach the stream channel and (2) provide suitable habitat within and adjacent to the SEZs.		X	X		
Downed logs are recruited through natural processes.				X	
Ensure that management activities, including fuels reduction actions, within SEZs and SRAs enhance or maintain physical and biological characteristics associated with aquatic- and riparian-dependent species.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.		X	X		X
Preserve special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.				X	
Identify and implement restoration actions to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species.		X	X		
Protect rare aquatic ecological habitats such as Osgood Swamp, Hell Hole, and Pope Marsh. Enhance these habitats through restoration activities such as the removal of upland vegetation (i.e. conifers, xeric species) and restoring hydrologic function.		X	X		X
Protect rare aquatic ecological habitats such as Osgood Swamp, Hell Hole, and Pope Marsh.					X
Maintain and restore connectivity of aquatic habitats where barriers to aquatic organism passage have been identified or where natural surface and subsurface water flows are intercepted, diverted, or disrupted in highest priority watersheds that were identified in the 2010 and 2011 aquatic organism passage report (LTBMU) within the life of the Forest Plan.		X	X		X
Maintain and restore connectivity of aquatic habitats for TES species where barriers to aquatic organism passage have been identified or where natural surface and subsurface water flows are intercepted, diverted, or disrupted in highest priority watersheds that were identified in the 2010 and 2011 aquatic organism passage report (LTBMU) within the life of the Forest Plan.				X	
Employ natural channel design methods/techniques to restore aquatic habitat, and facilitate upstream or downstream passage for aquatic-dependent species.	X	X	X		X
Restore aquatic habitat for native non-game fishes in streams that have been identified in the LTB five year restoration plan by removing stressors including but not limited to removal of invasive species such as warm water fish.		X	X		X
Manage stream reaches and associated habitat to support all life stages of native assemblages by providing aquatic organism passage for all life stages, stream conditions that provide spawning and rearing habitat such as appropriate pool/riffle ratio, substrate and large woody debris, except where not appropriate (e.g. some Urban Forest Parcels).	X	X	X		X
Manage stream reaches and associated habitat to support TES species by providing aquatic organism passage for all life stages, stream conditions that provide spawning and rearing habitat such as appropriate pool/riffle ratio, substrate and large woody debris, except where not appropriate (e.g. some Urban Forest Parcels).				X	
Participate with partner agencies to ensure native nongame fish status is current and accurate. Target to resurvey fish community sampling reaches at a minimum of every 10 years.	X	X	X	X	
Work collaboratively with partners to assess native non-game fish populations and implement habitat restoration strategies, such as warm-water fish removal.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Support active restoration for native fishes should occur where field data and other State, Federal, and other local agencies have determined that such species are at high risk of local extirpation.		X	X		X
Seek opportunities to remove physical impediments to the movement of aquatic species, or modify physical impediments to allow migration.	X	X	X		X
Seek opportunities to remove physical impediments to the movement of aquatic TES species, or modify physical impediments to allow migration.				X	
Maintain, restore, and/or enhance the ecological function and condition of shorelines, streams, lakes, wetlands (e.g., marshes, fens, springs, seeps, and lagoons), and/or meadows (wet and dry) in unstable or poorly functioning watersheds identified in the Lake Tahoe's Environmental Improvement Program or otherwise specified in species recovery plans within the life of the Forest Plan.	X	X	X	X	X
Allow aquatic ecosystems to adjust to natural processes.				X	
Promote actions that increase meadow wetness and diversity of native wetland species (i.e. obligate, facultative-wet).	X	X	X		X
In certain places in meadows, prescribed fire may be used to favor increased growth of certain species important to cultural practices, such as basket weaving.	X	X	X		X
Use historical sedimentation regimes as a guide for ecosystem resiliency and/or vulnerability.	X	X	X	X	X
Project activities should maintain or enhance groundwater connectivity in marshes and lagoons to maintain linkage with fluctuations in lake levels.	X	X	X	X	X
Management actions should consider retaining barrier beach and lagoon formations and processes.	X	X	X	X	X
Utilize prescribed fire in aquatic ecosystems where the use of fire is needed to improve habitat or the long-term function of these ecosystems. Ensure that fire intensity and severity (i.e. residence time) are consistent with the natural fire regime for the ecotype.	X	X	X	X	X
Consider the potential for changed flow regimes as a result of climate change during the development of the aquatic organism passage management and monitoring plan.	X	X	X	X	X
Terrestrial Habitats and Species					
Maintain, enhance, and/or restore terrestrial habitats to increase the diversity, abundance, and distribution of species and biological communities.	X	X	X		X
Natural processes are utilized to maintain and enhance the diversity, abundance, and distribution of species and biological communities.				X	
Where compatible with other resource objectives for the area, increase total Salix (willow) cover during project implementation where habitat conditions will support Salix communities.	X	X	X		X
Design management activities to maintain suitable habitat structure and function following implementation.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Manage snags and coarse woody debris for wildlife habitat as part of forest health or fuels reduction treatments as well as post-disturbance restoration.	X	X	X	X	X
Seek opportunities to develop and restore corridors for terrestrial species.		X	X		X
Seek opportunities to develop and restore corridors for terrestrial TES species.				X	
Maintain or restore habitat connectivity where appropriate to improve adaptive capacity. Collaborate with partners to establish priority locations for maintaining and restoring habitat connectivity.		X	X		X
Maintain or restore habitat connectivity for TES species where appropriate to improve adaptive capacity. Collaborate with partners to establish priority locations for maintaining and restoring habitat connectivity.				X	
Maintain, enhance, or restore the physical and biological attributes of habitats where rare plants occur.	X	X	X	X	X
Protect rare terrestrial ecological sites: including but not limited to Freel Peak, through restoration activities including, trail maintenance and signage.		X	X		X
Protect rare terrestrial ecological sites: including but not limited to Freel Peak, through trail maintenance and signage.				X	
Maintain or restore habitat connectivity where appropriate to improve adaptive capacity. Collaborate with partners to establish priority locations for maintaining and restoring habitat connectivity.		X	X		X
Maintain or restore habitat connectivity for TES species where appropriate to improve adaptive capacity. Collaborate with partners to establish priority locations for maintaining and restoring habitat connectivity.				X	X
Management activities should maintain, enhance, or restore the physical and biological attributes of habitats where rare plants occur.	X	X	X	X	X
Develop a conservation assessment for Draba (asterophora var. asterophora and Draba asterophora var. macrocarpa) within five years of Plan adoption.	X	X	X	X	X
Identify and, as needed, protect refuge areas for rare plants with habitat that is likely to reduce or change due to climate change (e.g. subalpine & alpine habitat).	X	X	X	X	X
Promote the use of native plant materials for the revegetation, rehabilitation, and restoration of ecosystems. Give primary consideration to genetically appropriate native plant materials.	X	X	X		X
Anticipate plant material needs for emergency and planned revegetation. Develop plant lists, planting guidelines, plant material sources, seed caches, and seed storage facilities.	X	X	X		X
Consider the enhancement of aquatic and terrestrial wildlife habitat (e.g. creation of snags, mosaic of habitat types) in forest management and prescribed fire projects.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Invasive Species (Aquatic and Terrestrial)					
Clean vehicles and equipment to prevent the accidental spread of aquatic and terrestrial invasive species	X	X	X	X	X
Use an Early Detection Rapid Response (EDRR) approach to survey susceptible aquatic and terrestrial areas, quickly detect invasive species infestations, and subsequently implement immediate and specific actions to control those infestations before they become established and/or spread.	X	X	X	X	X
Monitor management activities for potential spread or establishment of invasive species in aquatic and terrestrial areas of NFS lands.	X	X	X	X	X
Coordinate invasive species management actions (such as prevention, education, EDRR, up to date inventories, treatment) with tribes and other federal, state, local and private groups.	X	X	X	X	X
Support invasive species research. Adopt an integrated invasive species management approach that evaluates all available control methods, including biological, cultural, mechanical/physical, and chemical techniques, as well as addresses potential adverse effects to native species, human health, ecosystem processes, or other resources on NFS lands.	X	X	X	X	X
Aquatic Invasive Species					
Implement aquatic invasive species control and/or eradication measures where there is high potential for adverse effects to native species, human health, ecosystem processes, or resources on NFS lands.	X	X	X	X	X
Use prevention measures, such as screening, boat inspection, decontamination, and weed washing stations to reduce the spread or establishment of invasive species.	X	X	X	X	X
Cooperate with the multi-agency Lake Tahoe Region Aquatic Invasive Species Program.	X	X	X	X	X
Provide the public information about local Aquatic Invasive Species policies, where watercraft can be inspected and decontaminated prior to entering water bodies of the Lake Tahoe basin, and education regarding principles of cleaning, draining and drying for all watercraft at developed recreation facilities.	X	X	X	X	X
Reinforce consistent AIS prevention and outreach message at appropriate Forest Service recreation facilities.	X	X	X	X	X
Control existing or new populations of Eurasian milfoil, curly leaf pondweed, invasive warm-water fish, bullfrogs, Asian clam or other newly discovered populations of aquatic invasive species.	X	X	X	X	X
Work with current partners (CDFG, USFWS, UC Berkeley, and Sierra Nevada Aquatic Research Laboratory) and others to document Bd fungus occurrence levels in both existing populations and historic habitats of Sierra Nevada yellow-legged frog.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Terrestrial Invasive Species					
Cooperate with the multi-agency Lake Tahoe Basin Weed Coordinating Group Program. Prioritize invasive plant species and infestations, placing highest priority on new species and new, small infestations; include risk to NFS resources and feasibility of control among prioritization factors. Reassess priorities based on new information.	X	X	X	X	X
Focus treatment efforts on high priority species and infestations, while developing management goals for lower priority species and infestations.	X	X	X	X	X
Screen newly discovered terrestrial invasive plants species for management prioritization within two years of confirmed introduction on LTBMU.	X	X	X	X	X
Monitor invasive plant management projects to determine success and to evaluate the need for follow-up treatments or different control methods. Monitor known infestations, as appropriate, to determine changes in density and rate of spread.	X	X	X	X	X
Use prevention measures, such as materials inspection, equipment cleaning, and avoidance of known infested areas, to reduce the introduction and spread on invasive plants.	X	X	X	X	X
Assess the amount of ground and vegetation disturbance in habitats that are highly vulnerable to invasive plant invasion and pursue active revegetation as needed.	X	X	X	X	X
In partnership with the Pacific Southwest Research Station's Institute of Forest Genetics Blister Rust Project, identify and collect seed from 5-needle pine trees that exhibit rust resistance to white pine blister rust (target species are sugar pine, western white pine, and whitebark pine).	X	X	X	X	X
Identify and assess terrestrial wildlife invasive species during project planning. During planned restoration activities, consider terrestrial invasive wildlife.	X	X	X	X	X
Protected Activity Centers (PACs) and Home Range Core Areas (HRCAs)					
Collaborate with partners to establish priority locations for maintaining and restoring spotted owl habitat connectivity.	X	X	X	X	X
Species Refuge Areas					
Work collaboratively with the Tahoe Basin Recovery Implementation Team for LCT to implement the short-term recovery action plan.	X	X	X	X	X
Work collaboratively with partners to identify and implement additional habitat restoration efforts that expand the range of SNYLF in historic habitat throughout the Basin.	X	X	X	X	X
Work collaboratively with partners to implement a public-private Tahoe yellow cress adaptive framework, including (but not limited to): continued participation in the TYC Executive Committee and Adaptive Management Working Group; continued monitoring of TYC occurrences; encouragement of TYC stewardship on private lands; and site-specific conservation and restoration actions.	X	X	X	X	X
Continue TYC public outreach and education efforts.	X	X	X	X	X
Balance conservation of known TYC occurrences and high quality habitat with development and use of recreational facilities and access.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Revise site-specific TYC management plans to allow for adaptive management of known occurrences and high quality habitat that addresses both the annual shifts in habitat and threat level associated with lake level changes, and the provision of adequate beach access for recreational users.	X	X	X	X	X
Work collaboratively with partners to identify and implement efforts to conserve and, as necessary, restore whitebark pine stands.	X	X	X	X	X
Assess management activities for the risk of establishment or spread of white pine blister rust (WPBR) among whitebark pine stands.	X	X	X	X	X
Conserve whitebark pine genetic diversity by collecting and archiving seeds and growing and planting genetically diverse seedlings. Identify and collect seed from trees that exhibit some level of WPBR resistance. Where possible, protect valuable rust-resistant, seed-producing trees from future mortality caused by disturbance, climate change, and competition.	X	X	X	X	X
Proactively manage whitebark pine stands of high conservation or restoration priority to improve resilience after disturbance and resistance to pathogens. Actions may include: precautions to limit the spread of blister rust; use of fire or silvicultural treatments; or reforestation with WPBR-resistant seedlings.	X	X	X	X	X
Develop a unit-wide whitebark pine conservation strategy.	X	X	X	X	X
Identify whitebark pine stands of conservation and, as necessary, restoration priority. Develop spatially explicit species refuge areas.	X	X	X	X	X
Develop and maintain spatial data of known whitebark pine stands and potential habitat.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Recreation Program					
Partnership and Volunteers					
Provide for stewardship opportunities by partnering with schools, profit, and non-profit organizations, public, and other agencies.	X	X	X	X	X
Through joint participation, cooperative agreements, volunteer agreements, and grant funding, encourage partners and volunteer stewards to achieve mutual resource management and stewardship goals.	X	X	X	X	X
Using an all-lands approach, collaborate with neighboring communities, partner organizations, state and local agencies, tribes, and adjacent Forest Service units to achieve ecological, economic, and social sustainability within the lake Tahoe Basin and in surrounding areas.	X	X	X	X	X
Recreation Expansion					
Consider changing user demands, trends, and preferences, including modifying existing sites and infrastructure to improve natural resource conditions and recreation settings.	X	X	X	X	X
Review and evaluate existing design capacity and reduce site development when financially feasible.				X	
Undertake recreation expansion to address socioeconomic challenges, improve management of existing developed sites, and mitigate adverse effects to natural resources resulting from recreation activities.	X	X	X		X
Recreation Opportunities					
As recreation trends and users change, recreation facilities and opportunities are adapted to provide intended user experience while being compatible with management goals.	X	X	X	X	X
Use planning inventory and monitoring tools to identify changing desired recreation activities, settings, and opportunities.	X	X	X	X	X
Provide opportunities for general forest undeveloped camping where applicable and where it meets management goals. Periodically review and update the forest camping order based on public health and safety, fire prevention goals, and resource protection and management capabilities.	X	X	X	X	X
Provide opportunities for dispersed camping where applicable and where it meets management goals. Periodically review and update the forest camping order based on public health and safety, fire prevention and resource protection goals, and management capabilities.	X	X	X	X	X
Recognizing and accepting that some conflict between user groups is natural, the LTBMU will manage user interactions by using a variety of methods, including educating visitors on shared and multiple use concepts (e.g., signage, information kiosk, interpretive programs), managing visitor expectations, and recreation setting design.	X	X	X	X	X
Address hazards at recreation sites to provide for public safety.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
NFS lands on the LTBMU will provide a setting for local communities and visitors to pursue healthy lifestyle objectives and a range of outdoor pursuits year-round.	X	X	X	X	X
Perform Title VI reviews of permit holders and review NVUM survey results regularly to ensure recreation needs of a diverse visitor base are being addressed.	X	X	X	X	X
Maintain an interconnected, seamless approach to recreation planning in the Lake Tahoe Basin by applying an all-lands approach and collaborating with neighboring communities, partner organizations, state and local agencies, and adjacent Forest Service units.	X	X	X	X	X
Public Access					
Manage recreation activities to avoid or mitigate environmental degradation in sensitive environments to ensure continued access.	X	X	X	X	X
Maintain public access opportunities to Lake Tahoe shorelines and NFS lands.	X	X	X	X	X
Coordinate management activities to minimize impacts to public access and recreational experience.	X	X	X	X	X
Consider developed site design capacity and management capabilities when evaluating access.	X	X	X	X	X
Improve circulation and reduce congestion through capital investments.	X	X	X	X	X
Provide programs and facilities that meet universal accessibility standards.	X	X	X	X	X
Recreation Development					
Reduce deferred maintenance at developed recreation sites.	X	X	X	X	X
Management of developed recreation sites will consider deferred maintenance and modification and/or conversion of existing facilities to achieve ecological, social, and economic sustainability of the recreation setting prior to constructing new facilities.	X	X	X	X	X
Adjust recreation sites or permit boundaries to meet user needs and sustainability goals.	X	X	X	X	X
Recreation infrastructure will incorporate innovative and sustainable design concepts.	X	X	X	X	X
Modify or relocate federally-owned facilities and public access sites that are impeding groundwater connectivity, lagoon function, or barrier beach formation while maintaining public access and recreation opportunity.	X	X	X	X	X
Developed recreation sites are made more sustainable through design and construction principles in order to increase a site's ability to withstand use without facility or natural resource deterioration.	X	X	X	X	X
Coordinate with partner agencies, permit holders, and other appropriate organizations to educate visitors and residents on bear conflict issues in the LTBMU, and reduce the number of human-bear conflicts.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Recreation Special Uses Program					
Permitted activities increase opportunities for recreation use while protecting the natural setting and resources. Recreation special use permits effectively leverage LTBMU's ability to provide recreation services.	X	X	X	X	X
Evaluate existing recreation special use permits for deficiencies before considering new proposals.	X	X	X	X	X
Administer special use permits to Forest Service standards by: • Eliminating the backlog of expired authorizations; • Increasing monitoring and oversight of current authorizations; and • Completing appropriate level of environmental documentation.	X	X	X	X	X
Issue new recreation special use permits that expand opportunities in response to identified needs and management goals.	X	X	X		X
Consider long-term plans when expanding or modifying ski facilities and activities.	X	X	X		X
Consider summer uses at existing ski resorts consistent with national policy.	X	X	X		X
Interpretive Services Program					
Periodically review Interpretation and Education programs and information for consistency with national objectives and regional and local issues.	X	X	X	X	X
Communicate range of recreation opportunities and settings while emphasizing shared and multiple use objectives to the public. Encourage public responsibility for natural and cultural resource protection and recreation etiquette.	X	X	X	X	X
Chapter 1 Provide visitor information services at major entry points and areas of concentrated use.	X	X	X	X	X
Provide and update interpretive signage, wayside exhibits, publications, and programs using a variety of media and methods.	X	X	X	X	X
Educate the local community about the importance of ecosystem services and stewardship principles using teacher trainings, school programs, and community events.	X	X	X	X	X
Educate the local community about principles and methods for sustaining forests in a changing climate.	X	X	X	X	X
Inform the public about Forest Service projects and management actions.	X	X	X	X	X
Scenic Quality Program					
Manage scenery to perpetuate the overall natural-appearing setting, protect significant scenic features, and ensure that development is appropriate for the area in which it is located in terms of size, mass, architectural style, and density.	X	X	X	X	X
Consider the type, intensity, location, and visual characteristics of land use, visual dominance competition between the natural and built environments, and resource management actions, particularly in sensitive, undeveloped areas.	X	X	X	X	X
Manage for scenic stability through actions that will enhance and protect desired scenic attributes through vegetation treatments to achieve High Minimum Scenic Stability (MSS), on a project-by-project basis over the Plan Period. Examples include aspen stand enhancements and riparian area restorations.	X	X	X	X	X
Restore damaged landscape scenes (currently meeting Low or No Scenic Integrity Levels), to achieve the established scenery objectives shown in the Minimum Scenic Integrity (MSI) map.	X	X	X	X	X
Mitigate the establishment of visible lines in landscape areas where vegetation is removed for management objectives; cleared areas will include edges that reflect the visual character of naturally occurring vegetation openings.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Cultural Resources Program					
Through the Plan period, efficiently manage cultural resource databases to support resource management and research, in cooperation with the appropriate California and Nevada state agencies.	X	X	X	X	X
Employ education and enforcement to deter vandalism.	X	X	X	X	X
Implement restrictions, using permits and/or visitation controls, when necessary, to protect sites from physical damage and excessive wear and tear.	X	X	X	X	X
Implement a policy of site avoidance to prevent physical damage to heritage resources during forest management activities.	X	X	X	X	X
The cultural resources program will involve collaboration with site stewards; volunteers; State and other Federal agencies; local and tribal governments; schools and universities; and non-profit groups. Cooperative partnerships with organizations will provide site protection and facilitate development of research, educational, and interpretive opportunities. Public participation and partnerships in cultural resources management for these purposes will be increased.	X	X	X	X	X
Address natural physical deterioration of cultural resources based on resource priorities and availability of funding.	X	X	X	X	X
Tribal Relations Program					
Tribal input is solicited during all stages of planning processes. Existing agreements that allow the Tribe to manage vegetation resources in traditional use areas are maintained or enhanced, and tribal interests are integrated into LTBMU program areas where possible.	X	X	X	X	X
Coordinate management where National Forest lands are adjacent to tribal lands.	X	X	X	X	X
Continue support of the Washoe Tribe in pursuit of establishing a Washoe Cultural Center and a Washoe Tending and Gathering Garden.	X	X	X	X	X
Continue to implement the agreement regarding use of traditional management techniques for Meeks Meadow.	X	X	X	X	X
Work closely with tribes to ensure that cultural practices and traditional knowledge is preserved and made available to future generations through preservation of important resources and supporting traditional uses at Lake Tahoe.	X	X	X	X	X
Support the Washoe Tribe's goal of ensuring and increasing Tribal access to Lake Tahoe.	X	X	X	X	X
Work cooperatively with the Washoe Tribe to maintain access to and protect the physical integrity of Cave Rock and other culturally important areas.	X	X	X	X	X
Participate in additional LTBMU programs to enhance economic development opportunities for the Washoe Tribe (e.g. contracting, permits, employment). EO 13084-Consultation with Indian Tribal Governments. EO 13175-Consultation with Indian Tribal Governments.	X	X	X	X	X
Identify opportunities to incorporate tribal traditional management practices into projects to restore, enhance, and promote ecosystem health, in collaboration with the Washoe Tribe and native traditional practitioners.	X	X	X	X	X
Access and Travel Management Program					
Designate road and trail systems. Utilize the ATM planning process to identify sustainable route systems and identify authorized uses of routes (Motor Vehicle Use Map, MVUM). Update ATMs to respond to changing conditions.	X	X	X	X	X
Designate NFS lands open to use by over-snow vehicles.	X	X	X	X	X
Manage designated road and trail systems so that they are socio-economically as well as environmentally sustainable. Management techniques include: a. implement water quality protection BMPs, b. manage road gate openings and closures, c. provide managed parking opportunities, d. provide route information and regulations, e. reroute and restore alignments, f. provide for a variety of user types, g. design to reduce use conflicts,	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
h. provide multi-modal and loop trail opportunities, i. provide accessible opportunities, j. provide for Aquatic Organism Passage (AOP), k. anticipate higher and earlier peak run off water flows and more rain-on-snow events,					
Collaborate with agencies and partner organizations in road and trail transportation planning efforts aimed at connecting communities and public lands across jurisdictional boundaries.	X	X	X	X	X
Reduce roadside parking in areas of high density use and provide for managed parking. Prioritize transit or alternatives to the private automobile where parking capacity is reduced.		X	X	X	X
Increase dispersed winter parking opportunities.	X	X	X		X
National Trails System Program					
National Recreation Trails					
Utilize partnerships to achieve management goals for National Recreation Trails.	X	X	X	X	X
National trails meet the maintenance standards for the trail class and managed use, described in the Designated Special Area section of this Forest Plan (Section 2.4).	X	X	X	X	X
Limited recreation facilities, such as interpretive signs, viewing platforms, and benches may be present along the trail. Trailheads may offer amenities such as picnic facilities or interpretive information that enhances the experience of using the trail.	X	X	X	X	X
Trailheads may offer amenities such as picnic facilities or interpretive information that enhances the experience of using the trail.	X	X	X	X	X
Where the trail leads to an outstanding destination feature, the qualities of that feature are protected.	X	X	X	X	X
Reconstruct or relocate existing portions of the trail as needed to enhance the recreation experience and protect resources.	X	X	X	X	X
Trailheads are designed with sensitivity to scale and character of the setting.	X	X	X	X	X
Implement measures to protect areas of high ecologic value, such as rare plant sites or unique geologic features within the corridor, as needed.	X	X	X	X	X
Preserve the scenic quality and character of the National Recreation Trails.	X	X	X	X	X
National Scenic Trails					
Manage the PCT as a non-motorized and non-mechanized trail (i.e. hiking, pack and saddle, ski and snowshoe uses).	X	X	X	X	X
Emphasize preservation of the backcountry setting and rustic character of the trail and amenities along the trail.	X	X	X	X	X
The PCT meets the maintenance standard for the trail class and managed uses of hiker/pedestrian and pack and saddle.	X	X	X	X	X
Utilize partnerships to achieve management goals for the Pacific Crest Trail.	X	X	X	X	X
Require mitigation measures including screening, feathering, and other visual management techniques to mitigate visual and other impacts of new or upgraded utility rights-of-way. Mitigation measures apply to facilities as well as vegetation.	X	X	X	X	X
Where the trail leads to an outstanding destination feature, the qualities of that feature are protected.	X	X	X	X	X
Reconstruct or relocate existing portions of the PCT as needed to enhance the recreation experience and protect resources.	X	X	X	X	X
Trailheads are designed with sensitivity to scale and character of the setting.	X	X	X	X	X
Where possible, locate trailhead parking facilities in locations not visible from the trail.	X	X	X	X	X
Consider provision of campsites where there is a demonstrated need for overnight use and facilities are needed to protect natural resources.	X	X	X	X	X
Trailheads may offer amenities such as sanitation and picnic facilities and interpretive information that enhances the experience of the trail. Recreation facilities along the trail, such as interpretive signs, are installed primarily for resource protection.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Allow wildlife and fish habitat improvements which enhance trail desired conditions and setting. Allow expansion of existing forest openings and/or creation of new openings when compatible with desired conditions.	X	X	X	X	X
Allow timber harvest, prescribed burning, and wildland fire to manage vegetation consistent with desired conditions and setting for the PCT.	X	X	X	X	X
Wildfire suppression strategies will strive to minimize impacts on PCT values.	X	X	X	X	X
Restore degraded destinations, areas, or trail sections to provide for public use while improving the immediate foreground view from the trail and area focal points such as lakeshores.	X	X	X	X	X
Built Environment Program					
Use the Recreation Facility Analysis (RFA) and Facilities Master Plan to reduce deferred maintenance backlogs consistent with national direction.	X	X	X	X	X
Buildings and facilities are prioritized for construction, reconstruction or decommissioning based upon public benefit and ability to reduce deferred maintenance.	X	X	X	X	X
Provide and operate reliable, adequately sized facilities that support administrative needs and recreation opportunities.	X	X	X	X	X
Seek opportunities to reduce impervious coverage and soil compaction on low capability soils.	X	X	X	X	X
Implement water and energy conservation measures at developed recreation and administrative sites.	X	X	X	X	X
Reduce energy consumption associated with facilities operations and maintenance.	X	X	X	X	X
Retrofit Forest Service owned facilities with water quality protection BMPs throughout the Plan period.	X	X	X	X	X
Incorporate opportunities for use of public transit, or other alternative modes of` transportation into new facilities or those undergoing remodel, reconstruction, or retrofit.	X	X	X	X	X
Incorporate energy efficiency, conservation, sustainable design principles, and "green" technologies into administrative and recreation facilities whenever possible during renovations, remodels, reconstruction, retrofit, or new construction to minimize operation and maintenance costs.	X	X	X	X	X
The quality of the built environment should benefit from sound site planning as well as from low-energy and environmental design principles such as those embodied in the LEED program.	X	X	X	X	X
Construct facilities that are economically feasible to maintain.	X	X	X	X	X
Recreational facilities and trails are rehabilitated and/or maintained to improve the environment, the user experience, protect natural settings, restore cultural and historical areas, and enhance economic sustainability.	X	X	X	X	X
The architectural character of administrative and recreation buildings, landscape structures, site furnishings, wayside structures, and signs installed or operated on NFS lands are planned and designed with aesthetic characteristics that respect the cultural and natural scenic quality of the Lake Tahoe Basin. The built environment is economically, environmentally, and socially sustainable.	X	X	X	X	X
Prioritize buildings and facilities for construction, reconstruction or decommissioning based upon Agency or public benefit and ability to eliminate deferred maintenance.	X	X	X	X	X
Lands Program					
Resolve trespass and encroachments with the highest priority assigned to the following: 1) where public safety is threatened; 2) where damage to resources and/or resource values is occurring, or encroachment is interfering with resource management activities; and 3) where public access is interfered with.	X	X	X	X	X
Continue to purchase small urban lots, subdivision lots less than 1 acre, in Placer County only, where lots with an IPES score of 725 or less are still unbuildable and qualify for acquisition under the Santini-Burton program.	X	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D	Alt E
Direct all other land purchases to parcels larger than one acre that include important resource or recreational values, improve access to National Forest System lands, protect environmentally sensitive land from development or consolidate or improve NFS land boundaries, eliminate inholdings and provide for more efficient and effective resource management.	X	X	X	X	X
In El Dorado and Douglas Counties, consider accepting donations of small urban lots that are unbuildable due to their location in Stream Environmental Zones when they improve the ownership pattern and management efficiency.	X	X	X	X	X
Retain National Forest System lands in the Lake Tahoe Basin in public ownership to fulfill the specific objectives for which they were acquired	X	X	X	X	X
Seek opportunities for land adjustments with State and Local governments that consolidate ownership and improve management of urban lots.	X	X	X	X	X
When approving erosion control grant projects, consider transfer of ownership to grantees when the proposed improvements encumber twenty-five percent or more of the lot.	X	X	X	X	X
Consider authorizing small scale renewable energy projects, such a site specific solar, when they are compatible with other resource objectives and meet scenic resource standards.	X	X	X	X	X
There are no major utility transmission corridors currently designated in the Lake Tahoe Basin. Such corridors should not be designated at Lake Tahoe due to their incompatibility with the scenic, recreational and other resource values at Lake Tahoe.	X	X	X	X	X
Research and Monitoring Projects					
Actively seek and encourage research activities that may be beneficial in informing management of NFS lands. Routinely evaluate research findings to inform adaptive management.	X	X	X	X	X
Continue to prioritize science needs based on monitoring results, science findings, and national guidance.	X	X	X	X	X
Santini-Burton Acquired Lands/Urban Forest Parcels					
Manage urban forest as undeveloped parcels that provide open space and dispersed recreation opportunity.	X	X	X	X	X
Manage stand densities on urban forest parcels to achieve and maintain healthy forest characteristics.	X	X	X	X	X
Manage the continuity and arrangement of live and dead fuels to reduce risk of catastrophic fire, and to complement defensible space efforts on adjoining private lands. Urban Forest parcels are located within the urban zone of the wildland urban interface (WUI).	X	X	X	X	X
Retain, protect, and restore aspen and riparian plant communities to enhance wetland function and provide habitat for disturbance tolerant species that utilize urban forests.	X	X	X	X	X
Restore areas of existing human-caused disturbance, generally related to residential development, to control erosion and support natural watershed function.	X	X	X	X	X
Prevent the introduction of non-native, invasive species and noxious weeds and contain existing populations.	X	X	X	X	X
Mitigate all identified hazard trees as quickly as possible.	X	X	X	X	X
Abate all identified hazard trees as quickly as possible.	X	X	X	X	X

Appendix I: Comparison of Alternatives by Objective

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D	Alt E
Physical Resources Program					
OBJ1. Achieve load reduction targets for upland forest and SEZs identified in the Lake Tahoe TMDL during the life of the plan.	X	X	X	X	X
OBJ2. Implement effective BMPs to achieve 95% implementation and effectiveness ratings forest-wide in BMP assessments annually, as determined by the Pacific Southwest Region's Best Management Practices Effectiveness Program.	X	X	X	X	X
OBJ3. Maintain up to date inventory of water rights and uses on NFS lands, and meet state requirements for maintaining water rights.	X	X	X	X	X
OBJ4. Implement actions to restore geomorphic and habitat function to Reach 5 of the Upper Truckee River and Angora Creek within the Angora fire area by approximately 2016.	X	X	X	X	X
Forest Vegetation, Fuels and Fire Management Program					
OBJ5. Reduce surface, ladder and canopy fuels through thinning and fuel reduction treatments on 2,000 acres per year in the WUI.	X	X	X	X	X
OBJ6. Prescribed burning of surface fuels in the WUI occur on 1,800 acres per year when possible.	X	X			X
OBJ6. Prescribed burning of surface fuels in the WUI occur on 2,100 acres per year when possible.			X	X	
White fir – mixed conifer					
OBJ7. Create openings to shift approximately 50 acres of mid-seral white fir – mixed conifer type to early-seral each year over the latter 10 years of plan implementation (beginning 5 years after this Plan goes into effect).	X	X		X	X
OBJ7. Create openings to shift approximately 100 acres of mid-seral white fir – mixed conifer type to early-seral each year between 2019 and 2029.			X		
OBJ8. In stands historically dominated by pines, convert white fir-mixed conifer type generally in the early or mid-seral stages to Jeffrey pine by approximately 50 acres per year between 2019 and 2029. Retain pines during conversion treatments.	X	X		X	X
OBJ8. In stands historically dominated by pines, convert white fir-mixed conifer type generally in the early or mid-seral stages to Jeffrey pine by approximately 100 acres per year between 2019 and 2029. Retain pines during conversion treatments.			X		

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D	Alt E
OBJ9. Thin approximately 200 acres of white fir-mixed conifer each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought.	X	X			X
OBJ9. Thin approximately 400 acres of white fir-mixed conifer each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought.			X		
OBJ9. Thin approximately 120 acres of white fir-mixed conifer each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought.				X	
Jeffrey pine					
OBJ10. From the mid-seral stages create approximately 40 acres of openings to early-seral Jeffrey pine each year between 2019 and 2029, and maintain it as the dominant species. Employ techniques to release early seral pine from competing vegetation if necessary. Post-disturbance event treatments will be used as opportunities to regenerate early seral Jeffrey pine. This objective may be accomplished in coordination with white fir – mixed conifer conversion objective, above.	X	X		X	X
OBJ10. From the mid-seral stages create approximately 80 acres of openings to early-seral Jeffrey pine each year between 2019 and 2029, and maintain it as the dominant species. Employ techniques to release early seral pine from competing vegetation if necessary. Post-disturbance event treatments will be used as opportunities to regenerate early seral Jeffrey pine. This objective may be accomplished in coordination with white fir – mixed conifer conversion objective, above.			X		
OBJ11. Thin approximately 250 acres of Jeffrey pine each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought.	X	X			X
OBJ11. Thin approximately 500 acres of Jeffrey pine each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought.			X		
OBJ11. Thin approximately 150 acres of Jeffrey pine each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought.				X	
Red fir					
OBJ12. Create approximately 10 acres of openings in the mid-seral stages to shift stands to early-seral red fir type each year between 2019 and 2029. Utilize opportunities for treatment after disturbance events.	X	X		X	X

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D	Alt E
OBJ12. Create approximately 20 acres of openings in the mid-seral stages to shift stands to early-seral red fir type each year between 2019 and 2029. Utilize opportunities for treatment after disturbance events.			X		
OBJ13. Thin approximately 50 acres of red fir each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought.	X	X			X
OBJ13. Thin approximately 100 acres of red fir each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought.			X		
OBJ13. Thin approximately 30 acres of red fir each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought.				X	
Aspen					
OBJ14. Restore or stimulate regeneration of at least 25 acres of aspen per year.	X	X		X	X
OBJ14. Restore or stimulate regeneration of at least 50 acres of aspen per year.			X		
Biological Resources Program					
Conservation of Habitat and Species Diversity					
OBJ15. Restore a minimum of two fens that are assessed to be at risk of conversion to meadow, based on fen inventory and ranking assessment (California Native Plant Society and LTBMU data) by 2029.	X	X	X		X
OBJ16. Restore stream segments with degraded habitat in a minimum of 2 streams using natural channel design methods/techniques to design elements such as large wood and pools in aquatic habitats to maintain or improve biological processes (e.g., expansion of native species populations), biological characteristics (e.g., species composition), physical processes (e.g., erosion and aggradation), and physical characteristics (e.g., channel and over-bank flows) by 2029. This will provide important aquatic habitat needed to support all life history processes.	X	X	X		X
OBJ17. By 2019, identify degraded aquatic habitat that historically supported native aquatic species. Restore a minimum of two sites to support self-sustaining aquatic populations by 2029.	X	X	X		X
OBJ 18. By 2029, maintain or increase vegetation cover in meadows where LTBMU data shows that cover is insufficient.	X	X	X	X	X
OBJ19. Identify cave, cave surrogate, and/or cliff sites that are important to the survival, migration, reproduction, and dispersal of dependent species where removal of human impacts will improve species success. Remove human impacts at a minimum of one site identified, by 2029.	X	X	X		X

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D	Alt E
OBJ20. Restore a minimum of three willow flycatcher nesting habitats in historic and currently occupied habitats by 2029.	X	X	X		X
OBJ21. Complete the Aquatic Organism Passage (AOP) action plan to identify management opportunities for improving aquatic connectivity by 2016.	X	X	X	X	X
OBJ22. Improve 5 high priority AOP barriers by 2029, based on AOP management and monitoring plan.	X	X	X	X	X
OBJ23. Develop a conservation assessment for Tahoe and Cup Lake draba (*Draba asterophora* var. *asterophora, D.a.* var. *macrocarpa*) by 2019.	X	X	X	X	X
Invasive Habitats and Species (Aquatic and Terrestrial)					
OBJ24. Screen hand-carried/non-motorized watercraft are screened or show proof of boat inspection or decontamination at all staffed developed recreation sites (campgrounds, day use areas, resorts) check-in points (i.e. kiosks), by 2016.	X	X	X	X	X
Protected Activity Centers (PACs) and Home Range Core Areas (HRCAs)					
OBJ25. Restore six California spotted owl PACs (representing approximately 30 percent of the known territories in the Lake Tahoe Basin) by 2029; treatments would be designed based on restoration needs of the specific PAC.		X	X		X
OBJ26. Restore seven northern goshawk PACS (representing approximately 30 percent of the known territories in the Lake Tahoe Basin) by 2029; treatments would be designed based on restoration needs of the specific PAC.		X	X		X
Lahontan cutthroat trout					
OBJ27. Establish at least one self-sustaining Lahontan cutthroat trout sub-population in Fallen Leaf Lake, and implement appropriate conservation measures in Glen Alpine Creek in cooperation with the Lake Tahoe Basin Recovery Implementation Team by 2029.	X	X	X	X	
OBJ28. Secure the existing Upper Truckee River (Meiss Meadows) Lahontan cutthroat trout sub-population (four miles of stream habitat) through maintenance removal of brook trout by 2016.	X	X	X	X	
OBJ29. Reestablish Lahontan cutthroat trout in ten stream miles of the Upper Truckee River (from Meiss Meadows to the southern extent of Christmas Valley), in cooperation with California Department of Fish and Game by 2029.	X	X	X	X	X
OBJ30. Identify five recovery locations. Initiate recovery of two subpopulations of LCT within fluvial and/or lacustrine ecosystems, as identified by the Tahoe Basin LCT Recovery Implementation team by 2029.	X	X	X	X	X

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D	Alt E
OBJ31. Collaborate with California Department of Fish and Game, US Fish and Wildlife Service, and Eldorado National Forest to identify and restore additional suitable habitat for yellow-legged frog as deemed appropriate. Complete restoration of seven high alpine lakes (composed of habitat areas that would support four sub-populations) adjacent to current yellow-legged frog populations in the Desolation wilderness by removing introduced trout species by 2029.	X	X	X	X	X
OBJ32. Conduct physical habitat maintenance or enhancement that promotes long-term water availability and structural conditions to create areas for basking and/or cover, for the Hellhole yellow-legged for sub-population, by 2029	X	X	X	X	X
OBJ33. By 2029, maintain or expand fishless high elevation aquatic habitats near existing or historic SNYLF sub-populations where such habitats are determined to support yellow-legged frog production and development and these actions will increase localized range of SNYLF.	X	X	X	X	X
OBJ31. Collaborate with California Department of Fish and Game, US Fish and Wildlife Service, and Eldorado National Forest to identify and restore additional suitable habitat for yellow-legged frog as deemed appropriate. Complete restoration of seven high alpine lakes (composed of habitat areas that would support four sub-populations) adjacent to current yellow-legged frog populations in the Desolation wilderness by removing introduced trout species by 2029.	X	X	X	X	X
Recreation Program					
OBJ34. Evaluate visitor satisfaction and user trends by completing the National Visitor Use Monitoring Survey every 5 years.	X	X	X	X	X
Cultural Resources Program					
OBJ35. Nominate for listing to the National Register of Historic Places - the Comstock Historic Logging District, Angora Lookout, Cave Rock, Hawley Grade, Camp Richardson Resort, Meiss Cabin and Barn, and Skunk Harbor on the National Register of Historic Places by 2029.	X	X	X	X	X
OBJ36. By 2019, develop a management plan for arborglyphs throughout the Lake Tahoe Basin.	X	X	X	X	X
OBJ37. Add new interpretive elements (i.e. signs, boards, graphics, or new publicly-available printed materials) highlighting historic or cultural areas not yet interpreted in the Lake Tahoe Basin, by 2029.	X	X	X	X	X
Tribal Relations Program					

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D	Alt E
OBJ38. Revise the consultation protocol defined in the 1996 Memorandum of Understanding between the LTBMU and the Washoe Tribe by 2019.	X	X	X	X	X
Access and Travel Management Program					
OBJ39. Implement BMP retrofits on 285 miles of NFS roads by 2025.	X	X	X	X	X
OBJ40. Implement BMP retrofits on 370 miles of NFS trails by 2025.	X	X	X	X	X
Built Environment Program					
OBJ41. Implement BMP retrofits at all USFS facilities (including visitor centers, campgrounds, and parking lots.) by 2029.	X	X	X	X	X
OBJ42. Develop, plan and schedule to adoption for retrofitting five developed facilities rated as Development Scale 3-5 to include universally accessible features by 2025.	X	X	X	X	X
OBJ43. Maintain 15 administrative sites to standard by 2029.	X	X	X	X	X
OBJ44. Maintain 44 recreation sites to standard by 2029.	X	X	X	X	X
Santini-Burton Acquired Lands/Urban Forest Parcels					
OBJ45. Complete initial fuels reduction and forest health restoration treatments as needed on all urban forest parcels by 2019.	X	X	X	X	X
OBJ46. Conduct follow-up fuels treatments every 10-15 years in urban forest parcels.	X	X	X	X	X
OBJ47. Restore and vegetate areas of existing disturbance on up to 20 urban forest parcels annually	X	X	X	X	X

Appendix J: Alternative A – Standards and Guidelines

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
1	FP	IV-18		In resolving conflicts, the following list of resources or uses are in order of priority and will normally apply: a) Highest priority will be given to the protection of water quality and the enhancement of the clarity of water in Lake Tahoe. b) Protection of threatened and endangered plant and animal species native to the area; c) Preservation of cultural resources determined or believed to be of significance; d) Achievement of air quality standards for health, and visibility, and to prevent the adverse impacts of atmospheric deposition upon water quality; e) Maintenance of viable populations of wildlife; f) Achievement of diverse vegetation communities; g) Establishment of a variety of outdoor recreation facilities and uses at a level that assures a "fair share" of the basin capacity; h) Harvesting and treatment of timber stands to maintain health and diversity of the vegetation and to provide for the safety of people and property; i) Lowest priority will be given to forage grazing.
2	FP	IV-18		Selection of management practices to achieve forest goals and objectives and to resolve problems will be made at the project level based upon site specific analysis. Normally, procedures established in the National Environmental Policy Act and regulations of the Council of Environmental Quality 40CFR 1500-1508 will be used for analysis and documentation.
3	FP	IV-18		Program and project development will be guided by both this forest plan and by the TRPA Regional Plan for the Tahoe Basin. Define the process for TRPA review of national forest activities by Memorandum of Understanding between the two agencies.
4	FP	IV-18		Support the attainment of the Environmental Thresholds established for the Tahoe Basin (see Appendix E). Operate within Forest Service authority toward achievement of the thresholds regardless of the status of regional government in the area.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
5	FP	IV-18		Assist adjoining national forest in assessment of projects outside the Lake Tahoe Basin where there is potential for adverse affects upon achievement of environmental threshold standards. Recommend mitigation measures.
6	FP	IV-19	1	Give priority for recreation uses that are the most highly dependent upon the special resources of the area.
7	FP	IV-19	2	Protect and enhance potential recreation sites for future development.
8	FP	IV-19	3	Locate new recreational facilities on class 4-7 land capability and in proximity to necessary access and utilities.
9	FP	IV-19	4	Evaluate potential hazards and determine necessary mitigations during planning of all projects.
10	FP	IV-19	5	Locate visitor information services in areas of concentrated use or near entry points to the basin.
11	FP	IV-19	6	Base the type, location, and rate of recreation development on demand for such use. This will not exceed the 'fair share' of 4,550 PAOT of additional development. All or a portion of this capacity may be provided by private concessionaire.
12	FP	IV-19	7	Prepare a traffic analysis for each new recreation site which would produce more than 200 trips per day. Prepare a traffic analysis when existing sites that produce substantial traffic are proposed for reconstruction. TRPA criteria for a traffic analysis will be used including modeling that estimates the effects of the project upon level of service at key intersections, effects upon air quality, and effects upon traffic flow. Plan offsetting mitigation measures for the impacts.
13	FP	IV-19	8	Design facilities for service by transit operation. Those facilities that are near the lake shore should also be serviceable by shuttle type boats.
14	FP	IV-19	9	Provide open space between developed sites and between sites and urban areas. The space should be sufficient to keep the effects of one from diminishing the quality of experiences in the other. In situations where there is insufficient space, other measures, including alternative sites, should be considered to buffer effects.
15	FP	IV-19	10	Locate recreation uses which produce high noise levels away from recreation activities where low noise levels are important and away from critical wildlife habitat.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
16	SNFPA	62	82, 87, 89	*Mitigate impacts where there is documented evidence of disturbance to the nest or den site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb nest or den sites*
17				**2. Dispersed Recreation Facility Construction**
18	FP	IV-19	1	Plan for and construct approximately 2,230 PAOT of facilities such as trailheads in support of dispersed recreation. (Nearly 80% of this development is to provide for existing use rather than to expand use). Such facilities may be located on land capability classes 1-7. When located on class 1-3 land, the following findings must be made: a) The project by its very nature must be sited on environmentally sensitive land; b) There is no feasible alternative which avoids encroachment on these lands; and c) The impacts are fully mitigated through the application of BMP and restoration of comparably disturbed land at the rate of 1.5 to 1 for disturbance beyond that which is allowed for the Land Capability System (added by FP amendment #1, 6/1/1990)
19	FP	IV-19	2	Increase opportunity for hiking and riding outside of Desolation Wilderness with particular attention to those areas which have been, for lack of access or public ownership, poorly accessed in the past.
20				**3. Development and Administration of Private Sector Recreation**
21	FP	IV-20	1	Consider new private sector recreation use proposals including recreation events on the merits of each case. Applicants must demonstrate that private land is not available, capable, or suitable. Proponents will normally be expected to do their own environmental analysis and submit the documentation in an environmental assessment or impact statement acceptable to the Forest Supervisor.
22	FP	IV-20	2	Manage developed sites so that the number of occupants at any one time does not exceed the designed capacity.
23	FP	IV-20	3	Continue existing resort developments so long as they serve a public need that cannot be met on non-national forest system lands or where the resort development offsets the need for substantial capital investment by the Forest Service to meet public recreation demand.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
24	FP	IV-20	4	Allow new organization camps to be located in the Mt. Tallac Tract.
25	FP	IV-20	5	Arrange for removal of existing private structures (piers, boathouses, rafts, moorings, etc.) on lakeshore unless: a) they are necessary for the reasonable enjoyment of associated special use permits that are planned for continued use, and b) the need cannot reasonably be met through community or public facilities.
26	FP	IV-20	6	Allow new public use facilities on lakeshore as necessary to provide for recreation access to and enjoyment of the lake and shore areas. New structures for private purposes will not be allowed on lakeshore or other waterfront.
27	FP	IV-20	7	Do not permit new recreation residences including those upon unoccupied lots within existing recreation residence tracts.
28	FP	IV-20	8	Evaluate the suitability of recreation residence reconstruction case by case if destroyed by fire, snowloading, or other causes.
29	FP	IV-20	9	Permits for recreation residences within 100-year flood plain, avalanche path, unstable areas, or other hazardous situation, require a clause stating that substantial damage caused by the hazard will cause the permit to be revoked. No additions to existing improvements will be authorized for residences in such circumstances.
30	FP	IV-20	10	Continue existing recreation residences until a future use determination indicates one or more of the following conditions exist: a) The site is suitable for producing goods and services for which there is a demonstrated current or projected public need at that location; b) Substantial physical or psychological conflict with public recreation uses exists or is probable in the future, that cannot be mitigated in other ways; c) Unacceptable environmental effects upon water, air, or scenic quality, cultural resources or threatened and endangered species that cannot be mitigated or that the permittee is unwilling to mitigate; d) Significant natural hazards to the users of the site, now or in the future.
31	FP			*Recreation residences will not be allowed to expand in size to handle larger numbers of people or allowed additional impervious surface coverage. The exception is where the Forest Service or other regulatory agencies require additions to the residence for such improvements as toilet facilities. Modifications to assist persons with disabilities may be considered. If the required addition cannot be accommodated within the existing land coverage, additional coverage may be authorized.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
32	FP	IV-20	13	Manage the waiver to total waste water export granted by the Lahontan Water Quality Control Board for Echo Lakes; Angora Lakes; Lily Lake; Fish Hatchery Tract; and Lots 1, 19-23, 33, *35,* and 62-63 of Fallen Leaf Lake Tract. (Order #6-70-48). Requirements of the waiver are: a) Seasonal occupancy be normally limited to the summer months; b) Toilet wastes be exported from the Lake Tahoe Basin or incinerated; c) Solid wastes be exported from the Lake Tahoe Basin; d) No automatic washing machines, dishwashers, or garbage disposals be used; e) Only natural soaps or phosphate free cleaning agents be used; f) Food wastes be exported from the Lake Tahoe Basin or incinerated; g) Wash waters be discharged to leaching areas located a minimum of 100 feet from any surface water with a soil mantle adequate for percolation.
33	FP	IV-20	14	If the Lahontan Water Quality Control Board waiver (order # 6-70-48) is revoked, require the permittees to find acceptable methods for treating sewage or terminate the permits in ten years. The basis for the waiver was the finding that: a) The continued operation of septic tanks, cesspools, or other means of waste disposal in such areas will not, individually or collectively, directly or indirectly affect the quality of the waters of lake Tahoe, and b) The sewering of such area would have a damaging effect upon the environment.
34	FP	IV-21	15	Uses accessory to a permitted use, such as old privies, buildings and garages, outside storage of building materials, etc. will be evaluated as to need and appropriateness to the site. Inclusion or removal of the accessory uses in the permit, will be based upon the evaluation.
35	FP	IV-21	16	When renewing permits or making significant amendments, provisions will be made to incorporate the latest requirements for mitigating the environmental impacts of the activity or installation. These requirements will include, but are not limited to, incorporating Best Management Practices, visual improvements, noise management and mitigation of air and traffic impacts.
36	FP	IV-21	17	Arrange for a program for sharing maintenance costs on roads and trails serving both special use sites and general public use, on a basis proportionate to use. Agreements will be developed with individual permittees or associations of permittees to perform the maintenance.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
37				**4. Downhill Skiing**
38	FP	IV-21	1	Expansion of existing ski facilities shall be permitted based upon an approved master plan for the future facilities. The plan must demonstrate that: 1) the expansion is consistent with the availability of accommodations and infrastructure to support visitors when they are off the ski area, 2) the expansion does not result in any enlargement of total parking facilities for personal automobiles in the Lake Tahoe Basin, and 3) the expansion is consistent with all other goals and policies of the TRPA Regional Plan and all other standards and guidelines of this forest plan. Existing master plans will be amended to account for the above criteria. Expansion shall not exceed 12,400 PAOT of additional capacity from all ski areas on national forest land
39	FP	IV-21	2	Proposals for ski area development at any sites not approved in this forest plan will not be considered until this plan is revised in the next round of planning. Stevens Peak, Waterhouse Peak, Blackwood and Freel were potential ski areas that will not be considered.
40				**5. Developed Recreation and VIS Site Operation, Maintenance and Protection**
41	FP	IV-21	1	Manage developed sites so that the number of occupants does not exceed the design capacity. Provide standard service level throughout the primary use period (June 15 through Labor Day). Sites may be operated at low standard or closed to public use outside of this primary use period.
42	FP	IV-21	2	Provide a coordinated system of interpretive facilities and programs that efficiently meet the needs of target audiences. Develop interagency interpretive facilities and programs where feasible.
43	FP	IV-21	3	Stress understanding of the natural and cultural environment and forest management practices in interpretive programs. Emphasize self-guided interpretation that involves people as an integrated part of the natural environment. Use the interpretive program to aid in understanding the special management required to protect Lake Tahoe.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
44				**6. Dispersed Recreation and VIS Site Operation, Maintenance and Protection**
45	FP	IV-22	1	Manage developed sites so that the number of occupants does not exceed the design capacity. Provide standard service level throughout the primary use period (June 15 through Labor Day). Sites may be operated at low standard or closed to public use outside of this primary use period.
46	FP	IV-21	2	Provide a coordinated system of interpretive facilities and programs that efficiently meet the needs of target audiences. Develop interagency interpretive facilities and programs where feasible.
47	FP	IV-21	3	Stress understanding of the natural and cultural environment and forest management practices in interpretive programs. Emphasize self-guided interpretation that involves people as an integrated part of the natural environment. Use the interpretive program to aid in understanding the special management required to protect Lake Tahoe.
48				**7. Dispersed Recreation Management - Summer**
49	FP	IV-22	1	Give priority to the following actions to facilitate dispersed recreation activities: a) Maintain a variety of environmental conditions (ROS classes) to satisfy different visitor interests (see ROS map); b) Minimize adverse resource impacts from concentrated dispersed use by developing resource or social carrying capacity limits as needed; c) Assure access to locations offering dispersed recreation attractions where environmental and social conditions permit; d) Provide information to visitors about the variety of recreation opportunities and regulations regarding the management of national forest lands; e) Enhance the opportunities by building and maintaining where appropriate, trails, trailheads, and other support facilities to provide for multiple kinds of dispersed recreational opportunities; f) Identify potential summer and winter OHV routes that can be developed consistent with environmental and management guidelines, *including protection of water quality and critical wildlife habitat*, with special emphasis placed on minimizing conflicts between users and urban areas.
50	FP	IV-22	2	Allow opportunities for dispersed undeveloped camping. Annually review the camping closures, through an interdisciplinary process, to assure that the purpose for the closures is being achieved. Revise Forest Supervisor's orders for closures as necessary.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
51	FP	IV-22	3	Hazard tree removal will meet the standards required for developed sites where intensity of dispersed use is comparable to a developed site.
52	FP	IV-22	4	Cooperate with other jurisdictions to manage highway traffic for enjoyable travel. Generally, peak use traffic flow shall not exceed level of service 'C' in the Roaded Natural ROS Class Areas and level of service 'D' within Rural ROS Class Areas. (Levels refer to Federal Highway Administration Standards.)
53	FP	IV-22	5	Minimize conflict between dispersed recreation user groups, including those operating under special use permits. Deny a special use when such use would not be compatible with desired ROS class of the area or where public recreation use is already at a high level.
54	FP	IV-22	6	Manage density of use so as not to exceed the level where resource damage becomes unacceptable on the lower Truckee River, at the east shore beaches, and at other environmentally sensitive but highly attractive dispersed recreation sites. Where the number of recreationists results in unacceptable degradation of the site and the only solution would be to develop facilities inappropriate to the target ROS class, visitor rationing may be imposed.
55	FP	IV-22	7	Allow mountain bicycles on system roads and trails except within wilderness areas, where they are prohibited. Further study the impacts of this relatively new use of trails to better determine the environmental effects and appropriate regulations. Where necessary to prevent environmental degradation or user conflict, trails may be closed to mountain bike use. Encourage mountain bikes to remain on developed roads and trails.
56	FP	IV-22	8	Develop direction for management of the Tahoe Rim Trail including regulations for use of the trail, facility and signing design, maintenance and patrol, and education programs. Defer issuance of outfitter guide permits on completed segments of the Tahoe Rim Trail for five years after construction or until completion of a Rim Trail management plan, whichever occurs first.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
57	FP	IV-22	9	Provide a system of system roads and trails designed to meet the needs of a wide variety of off-highway vehicles. Allow summer off-highway vehicle use only on designated (marked) forest system roads and trails that are managed for this use. Summer OHV use is not permitted on Forest System roads and trails that have been administratively closed and marked as such by gates, signing, fencing or other means of designation. Summer OHV use will not be permitted on trails unless they are signed or otherwise marked as a motorized trail. OHVs will only be permitted to access the national forests through designated trailheads or roadways. Random access through public lands will not be allowed
58	FP	IV-23	10	Roads and trails will be closed when there is a finding that adverse resource impacts are occurring that cannot be reasonably mitigated, and where OHV use is significantly conflicting with established urban areas adjacent to the national forest. Soil, water and other resource monitoring will be instituted as part of the Unit OHV program
59	FP	IV-23	11	Summer OHV road and trail system opportunities will be provided in those areas identified in the Management Area Directions for the LTBMU and on the Summer OHV Management Map. Emphasis of the OHV system will be to divert use away from sensitive areas, to direct use away from private land interface and to provide routes that encourage access to suitable OHV use areas. Consistent monitoring of user compliance will be maintained.
60	FP	IV-23	12	Suitable conditions for summer OHV use of designated roads and trails will exist when road or trail surface is sufficiently dry to prevent resource damage. All roads and trails are closed to motorized use when wet conditions would lead to resource damage.
61	FP	IV-23	13	Maintain a public information program to inform and involve OHV users regarding the implementation of OHV regulations and direction. Maintain an active program of patrol and maintenance on designated routes, and of law enforcement to minimize unlawful OHV use.
62	SNFPA	59	69	*Prohibit wheeled vehicle travel off of designated routes, trails, and limited off highway vehicle (OHV) use areas. Unless otherwise restricted by current forest plans or other specific area standards and guidelines, cross-country travel by over-snow vehicles would continue.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
63	SNFPA	62	82, 87, 89	*Mitigate impacts where there is documented evidence of disturbance to the nest or den site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb nest or den sites.*
64				**8. Dispersed Recreation Management - Winter**
65	FP	IV-23	1	Give priority to the following actions to facilitate dispersed recreation activities: a) Maintain a variety of environmental conditions (ROS classes) to satisfy different visitor interests (see ROS map); b) Minimize adverse resource impacts from concentrated dispersed use by developing resource or social carrying capacity limits as needed; c) Assure access to locations offering dispersed recreation attractions where environmental and social conditions permit; d) Provide information to visitors about the variety of recreation opportunities and regulations regarding the management of national forest lands; e) Enhance the opportunities by building and maintaining where appropriate, trails, trailheads, and other support facilities to provide for multiple kinds of dispersed recreational opportunities; f) Identify potential summer and winter OHV routes that can be developed consistent with environmental and management guidelines, with special emphasis placed on minimizing conflicts between users and urban areas.
66	FP	IV-23	2	Allow opportunities for dispersed undeveloped camping. Annually review the camping closures, through an interdisciplinary process, to assure that the purpose for the closures is being achieved. Revise Forest Supervisor's orders for closures as necessary.
67	FP	IV-23	3	Hazard tree removal will meet the standards required for developed sites where intensity of dispersed use is comparable to a developed site.
68	FP	IV-23	4	Cooperate with other jurisdictions to manage highway traffic for enjoyable travel. Generally, peak use traffic flow shall not exceed level of service 'C' in the Roaded Natural ROS Class Areas and level of service 'D' within Rural ROS Class Areas. (Levels refer to Federal Highway Administration Standards.)
69	FP	IV-23	5	Minimize conflict between dispersed recreation user groups, including those operating under special use permits. Deny a special use when such use would not be compatible with desired ROS class of the area or where public recreation use is already at a high level.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
70	FP	IV-23	6	Manage density of use so as not to exceed the level where resource damage becomes unacceptable on the lower Truckee River, at the east shore beaches, and at other environmentally sensitive but highly attractive dispersed recreation sites. Where the number of recreationists results in unacceptable degradation of the site and the only solution would be to develop facilities inappropriate to the target ROS class, visitor rationing may be imposed.
71	FP	IV-23	7	Allow mountain bicycles on system roads and trails except within wilderness areas, where they are prohibited. Further study the impacts of this relatively new use of trails to bet determine the environmental effects and appropriate regulations. Where necessary to prevent environmental degradation or user conflict, trails may be closed to mountain bike use. Encourage mountain bikes to remain on developed roads and trails.
72	FP	IV-23	14	The winter OHV management map shows those areas where snowmobiles and other over-the-snow vehicles are permitted and those areas closed to winter motorized use. Over-the-snow vehicles are permitted only where at least six inches of snow covers the ground. Modifications of the Winter OHV Management Map may be made following project level planning and preparation of an environmental analysis.
73				**Visual and Cultural Resources**
74				**9. Visual Quality Restoration or Improvement**
75	FP	IV-24	1	Schedule rehabilitation of sites that do not meet the adopted Visual Quality Objectives except where natural processes are expected to provide adequate restoration by the year 2005.
76	FP	IV-24	2	Increase opportunities to view Lake Tahoe or other scenic attractions from highways, vista points, and other planned locations.
77	FP	IV-24	3	Include mitigation measures for all activities where the activity would alter the landscape beyond the adopted Visual Quality Objective.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
78	FP	IV-24	4	Participate with State and local jurisdictions in the design of highway corridors to provide an aesthetically pleasant drive through the basin, opportunities to appreciate the lake as a focal point, and to emphasize the natural rather than the man' made environment. Initiate enhancement action as well as restorative action. (Refer to the TRPA visual quality system for roadways.)
79	FP	IV-24	5	Establish procedures with local governments that encourage depositing of refuse at authorized disposal site and discourage unauthorized dumping caused by high fees or inconveniences resulting from mandatory export from the basin.
80	FP	IV-24	6	Design recreation or special use construction on the lakeshore (above high water line) to preserve the visual character of shorezone. (Refer to the TRPA visual quality system for the shorezone.)
81	FP	IV-24	7	Signs installed on the forest will be maintained, removed, or replaced if determined to be distracting to near view visual standards.
82				**10. Cultural Resource Management**
83	FP	IV-24	1	Conduct surveys and inventories to identify the presence or absence of archaeological, historical, or other cultural resource properties, giving priority to planned activity areas, in a manner consistent with the National Historic Preservation Act. Prepare written reports documenting survey coverage, methods, and recordation using guidelines from the State Historic Preservation Officer (SHPO), the Forest Service, and the Advisory Council on Historic Preservation (ACHP).
84	FP	IV-24	2	Evaluate properties to assess their scientific, ethnic, or historic significance by applying the National Register of Historic Places criteria of eligibility. Assess the effects of each undertaking on significant historic properties. In consultation with the SHPO and the ACHP if necessary, develop mitigation measures alleviate adverse impacts on significant properties.
85	FP	IV-24	3	Protect all identified cultural properties until they are evaluated, with all unevaluated properties being treated as eligible for nomination to the National Register of Historic Places and afforded the same consideration as national register properties. Evaluate the historical and architectural significance of all buildings scheduled for removal.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
86	FP	IV-24	4	Conduct compliance inspections of special use operations and project activities with stipulations or conditions regarding known cultural resources. Ensure confidentiality of most site locations to minimize threat of thefts and vandalism. Prevent natural physical deterioration where possible.
87	FP	IV-24	5	Enhance cultural resources through scientific study and interpretation of their significant values, for increased public education and enjoyment. Avoid and/or protect Native American religious or burial sites; and encourage the reestablishment of traditional ties to Lake Tahoe by the Washoe Tribe through such means as the construction of a cultural center near Taylor Creek. Rehabilitate or restore historic structures for interpretive or other purposes.
88				**Wilderness**
89				**11. Management of Wilderness Resource**
90	FP	IV-25	1	Provide the opportunity for public use, enjoyment, and understanding of the wilderness at a level of visitation that assures availability of solitude, and a primitive, unconfined recreation experience. Maintain stable watersheds, indigenous plants and animals, and other features essential to preserving natural conditions.
91	FP	IV-25	2	Maintain a high level of freedom for movement and activity once a visitor has entered the wilderness. Employ constraints when necessary to maintain the wilderness resource.
92	FP	IV-25	3	Reduce the impact of nonconforming activities or improvements so that the imprint of these works is not noticeable.
93	FP	IV-25	4	Require outfitter guides to participate in the maintenance of wilderness trails and camps.
94	FP	IV-25	5	Evaluate the need to set an upper limit on the number of outfitter guide special use permits within designated Wilderness. Issue no new outfitter guide permits within Desolation Wilderness. Issue no permits for competitive recreation events within Wilderness areas.
95	FP	IV-25	6	Evaluate major emission sources which might affect the Class I airshed; including sources not on Federal land. Inventory and assess identified air quality related values (AORV) and the effects of air pollution on them.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
96	FP	IV-25	7	Consider insect and plant disease control only when necessary to prevent a) unacceptable or unnatural loss of the wilderness resource due to exotic pests, b) unacceptable damage to resources on adjacent lands, and c) any threat to continued lawful uses of, or activities in, the area. If control is necessary, it will be carried out using techniques which have the least adverse impact on the wilderness resource and are compatible with wilderness management direction.
97				**Wildlife and Fish**
98				**12. Nonstructural Wildlife Habitat Management**
99	FP	IV-26	1	Protect or improve habitat through coordination with other management activities.
100	FP			*When timber management is selected to modify forest habitat, the location and extent of openings and the potential for type conversion, reforestation, and timber stand improvement will be evaluated and selected as necessary to ensure that wildlife objectives are achieved.*
101	SNFPA	51	10	*Determine down woody material retention levels on an individual project basis, based on desired conditions. Emphasize retention of wood in the largest size classes and in decay classes 1, 2, and 3. Consider the effects of follow-up prescribed fire in achieving desired down woody material retention levels*
102	SNFPA	51-52	11	*Determine snag retention levels on an individual project basis for vegetation treatments. Design projects to implement and sustain a generally continuous supply of snags and live decadent trees suitable for cavity nesting wildlife across a landscape. Retain some mid- and large diameter live trees that are currently in decline, have substantial wood defect, or that have desirable characteristics (teakettle branches, large diameter broken top, large cavities in the bole) to serve as future replacement snags and to provide nesting structure.*
103	FP	IV-26		Provide cover for a variety of species by retaining at least two slash piles per acre in areas lacking other suitable wildlife cover except where fire hazard or visual management standards would be exceeded.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
104	FP	IV-26		Provide adequate advance posting and notification when seasonal closures are used to protect habitat, especially nesting sites, of species sensitive to human activity. Duration of closure will be as short as feasible where recreation opportunities are in demand.
105	FP	IV-26		Require non-degradation of existing deciduous tree types, wetland, and meadow habitat. Increase the acreage in these riparian associations where opportunities are present.
106	FP	IV-26		Maintain the present acreages of the seven seral stages in the mixed conifer and the red fir timber types while producing increases in seral stages 1 & 2 through vegetation management activities.
107	FP			Evaluate opportunities to manage and improve diversity through timber management and wildlife habitat improvement activities on a watershed or management area level, as well as basinwide.
108	FP			In created openings larger than two acres, 4 – 6 % of the green stand, preferably in dispersed clumps, will be retained for snag recruitment, except in areas where it would conflict with objectives for type conversion. In openings smaller than two acres, retention of trees for snag recruitment will be considered in project planning.
109	FP	IV-26		Establish maximum beaver population levels for zones or watersheds and manage so as not to exceed the level as described in the Beaver Management Plan for the LTBMU, 1980. Decisions for population control in a zone will be based upon food cache and colony size estimates, or upon the new occupancy of areas undesirable for beaver.
110	SNFPA	54	33	*Conduct surveys in compliance with the Pacific Southwest Region's survey protocols during the planning process when proposed vegetation treatments are likely to reduce habitat quality in suitable California spotted owl habitat with unknown occupancy. Designate California spotted owl protected activity centers (PACs) where appropriate based on survey results*
111	SNFPA	59	71	*Within the assessment area or watershed, locate fuels treatments to minimize impacts to PACs. PACs may be re-mapped during project planning to avoid intersections with treatment areas, provided that the re-mapped PACs contain habitat of equal quality and include known nest sites and important roost sites. Document PAC adjustments in biological evaluations*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
112	SNFPA	59	71	*When treatment areas must intersect PACs and choices can be made about which PACs to enter, use the following criteria to preferentially avoid PACs that have the highest likely contribution to owl productivity.*
113	SNFPA	60	72	*Mechanical treatments may be conducted to meet fuels objectives in protected activity centers (PACs) located in WUI defense zones. In PACs located in WUI threat zones, mechanical treatments are allowed where prescribed fire is not feasible and where avoiding PACs would significantly compromise the overall effectiveness of the landscape fire and fuels strategy. Mechanical treatments should be designed to maintain habitat structure and function of the PAC.*
114	SNFPA	60	73	*While mechanical treatments may be conducted in protected activity centers (PACs) located in WUI defense zones and, in some cases, threat zones, they are prohibited within a 500-foot radius buffer around a spotted owl activity center within the designated PAC. Prescribed burning is allowed within the 500-foot radius buffer. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat. Treatments in the remainder of the PAC use the forest-wide standards and guidelines for mechanical thinning.*
115	SNFPA	60	74	*In PACs located outside the WUI, limit stand-altering activities to reducing surface and ladder fuels through prescribed fire treatments. In forested stands with overstory trees 11 inches dbh and greater, design prescribed fire treatments to have an average flame length of 4 feet or less. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat.*
116	SNFPA	53	16	*Outside of WUI defense zones, salvage harvests are prohibited in PACs and known den sites unless a biological evaluation determines that the areas proposed for harvest are rendered unsuitable for the purpose they were intended by a catastrophic stand-replacing event*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
117	SNFPA	60	75	*For California spotted owl PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the activity center during the breeding season (March 1 through August 31), unless surveys confirm that California spotted owls are not nesting. Prior to implementing activities within or adjacent to a California spotted owl PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center.*
118	SNFPA	60	76	*For northern goshawk PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the nest stand within a protected activity center (PAC) is unknown, either apply the LOP to a ¼- mile area surrounding the PAC, or survey to determine the nest stand location.*
119	SNFPA	60	77	*The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be modified*
120	SNFPA	61	78, 79	*Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of California spotted owl and northern goshawk PACs per year on a forest.*
121	SNFPA	61	80	*For California spotted owl PACs: Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the acres in California spotted owl PACs in the 11 Sierra Nevada national forests. Monitor the number of PACs treated at a bioregional scale.*
122	SNFPA	61	81	*For northern goshawk PACs: Conduct mechanical treatments in no more than 5 percent per year and 10 percent per decade of the acres in northern goshawk PACs in the 11 Sierra Nevada national forests.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
123	SNFPA	54	34	*Conduct surveys in compliance with the Pacific Southwest Region's survey protocols during the planning process when vegetation treatments are likely to reduce habitat quality are proposed in suitable northern goshawk nesting habitat that is not within an existing California spotted owl or northern goshawk PAC. Suitable northern goshawk nesting habitat is defined based on the survey protocol*
124	FP	IV-26		Identify potential bald eagle nesting sites and manage to encourage reestablishment of four pairs. Sites will consist of mature or overmature conifer stands, within 1/2 mile of large bodies of water, and with relative freedom from human disturbance.
125	FP	IV-27		Reintroduce one Peregrine falcon pair to a potential nest site. Prohibit rock climbing on nesting cliffs between April 1 and July 31. Construct no trails or roads to the top or base of nesting cliffs.
126	FP	IV-27		Manage wetlands suitable for waterfowl nesting for low level human disturbance from March 1 to June 30, excepting the Pope Beach recreation site, which may be opened beginning Memorial Day weekend. Harassment of nesting waterfowl by domestic animals (especially dogs) must be controlled.
127	FP	IV-27		Protect mule deer fawning areas by constructing no permanent roads within 100 feet of meadow edges and by avoiding meadow crossings. Keep road density to less than five linear miles per square mile of land area.
128	FP	IV-27		Work with local communities to control domestic animals that conflict with wildlife.
129	SNFPA	54	32	*Detection of a wolverine or Sierra Nevada red fox will be validated by a forest carnivore specialist. When verified sightings occur, conduct an analysis to determine if activities within 5 miles of the detection have a potential to affect the species. If necessary, apply a limited operating period from January 1 to June 30 to avoid adverse impacts to potential breeding. Evaluate activities for a 2-year period for detections not associated with a den site.*
130	SNFPA	54	35	*Conduct additional surveys to established protocols to follow up reliable sightings of great gray owls.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
131	SNFPA	54	60	*For historically occupied willow flycatcher sites, assess willow flycatcher habitat suitability within the meadow. If habitat is degraded, develop restoration objectives and take appropriate actions (such as physical restoration of hydrological components, limiting or re-directing grazing activity, and so forth) to move the meadow toward desired conditions.*
132	SNFPA	58	56	*For occupied and historically occupied willow flycatcher sites: Initiate a 4-year cycle for willow flycatcher surveys. Conduct surveys to established protocols in all sites the first year. Second year surveys will be conducted in those sites where willow flycatchers were not found. Surveys will not be conducted in the third and fourth years. The survey cycle will then be repeated. For conditionally occupied sites: Surveys will be conducted in the first year. If willow flycatchers are found, these sites will be managed as occupied sites. If not found, these sites will be surveyed in the second year. If birds are not found in the second year, these sites will be dropped from the willow flycatcher site database*
133	SNFPA	58	57	*In meadows with occupied willow flycatcher sites, allow only late-season grazing (after August 15) in the entire meadow.*
134	SNFPA	58	58	*Standard and guideline #57 above may be waived if an interdisciplinary team has developed a site- specific meadow management strategy. This strategy is to be developed and implemented in partnership with the affected grazing permittee. The strategy objectives must focus on protecting the nest site and associated habitat during the breeding season and the long-term sustainability of suitable habitat at breeding sites. It may use a mix of management tools, including grazing systems, structural improvements, and other exclusion by management techniques to protect willow flycatcher .*
135	SNFPA	58	61	*Evaluate site condition of historically occupied willow flycatcher sites. Those sites that no longer contain standing water on June 1 and a deciduous shrub component and cannot be reasonably restored may be removed from the willow flycatcher site database*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
136	SNFPA	58	62	*As part of the project planning process, survey emphasis habitat within 5 miles of occupied willow flycatcher sites to determine willow flycatcher occupancy. Emphasis habitat is defined as meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component. Use established protocols to conduct these surveys. If these surveys determine willow flycatcher occupancy, add these to the database of occupied willow flycatcher sites and include them in the 4-year survey cycle of willow flycatcher sites described above*
137	SNFPA	62	83	*Apply a limited operating period, prohibiting vegetation treatments and road construction within ¼ mile of an active great gray owl nest stand, during the nesting period (typically March 1 to August 15). The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be reduced*
138	SNFPA	61	84	*In meadow areas of great gray owl PACs, maintain herbaceous vegetation at a height commensurate with site capability and habitat needs of prey species. Follow regional guidance to determine potential prey species and associated habitat requirements at the project level*
139	SNFPA	61	85	*Protect fisher den site buffers from disturbance with a limited operating period (LOP) from March 1 through June 30 for vegetation treatments as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
140	SNFPA	61	86	*Avoid fuel treatments in fisher den site buffers to the extent possible. If areas within den site buffers must be treated to achieve fuels objectives for the urban wildland intermix zone, limit treatments to mechanical clearing of fuels. Treat ladder and surface fuels to achieve fuels objectives. Use piling or mastication to treat surface fuels during initial treatment. Burning of piled debris is allowed. Prescribed fire may be used to treat fuels if no other reasonable alternative exists.*
141	SNFPA	62	88	*Protect marten den site buffers from disturbance from vegetation treatments with a limited operating period (LOP) from May 1 through July 31 as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location.*
142	SNFPA	63	98	*Within 500 feet of known occupied sites for the California red-legged frog, Cascades frog, Yosemite toad, foothill yellow-legged frog, mountain yellow-legged frog, and northern leopard frog, design pesticide applications to avoid adverse effects to individuals and their habitats.*
143				**13. Early Successional Stage Vegetation Management**
144	FP	IV-27	1	Develop and maintain a watershed by watershed inventory of where and when forest openings up to five acres in size could be introduced to produce greatest benefits for vegetative diversity and wildlife habitat. Use this inventory to establish priorities for the timber management program.
145	FP	IV-27	2	Schedule treatments to produce early successional stages through prescribed fire, precommercial cutting or other methods if the minimum desired acreage (400 new acres by 1996) cannot be achieved through the timber program.
146	SNFPA	58	60	*For historically occupied willow flycatcher sites, assess willow flycatcher habitat suitability within the meadow . If habitat is degraded, develop restoration objectives and take appropriate actions (such as physical restoration of hydrological components, limiting or re-directing grazing activity, and so forth) to move the meadow toward desired conditions.*
147				**14. Old Growth Management**

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
148	FP	IV-27	1	Maintain 5% or more of the land area in the mixed conifer type, and in the red fir type, in old growth (seral stage 4C) to support dependent wildlife species and to provide visual variety. Continue to preserve most of the 4G stands and size 6 trees.
149	FP	IV-27	2	Old growth stands that are larger than 40 acres and are within 1/2 mile of water will be protected and maintained for wildlife.
150	SNFPA	53	27	*Minimize old forest habitat fragmentation. Assess potential impacts of fragmentation on old forest associated species (particularly fisher and marten) in biological evaluations.*
151	SNFPA	54	28	*Assess the potential impact of projects on the connectivity of habitat for old forest associated species.*
152	SNFPA	54	29	*Consider retaining forested linkages (with canopy cover greater than 40 percent) that are interconnected via riparian areas and ridgetop saddles during project-level analysis.*
153	SNFPA	54	31	*Identify areas for acquisition, exchange, or conservation easements to enhance connectivity of habitat for old forest associated species.*
154				**15. Nonstructural Fish Habitat Management**
155	FP			*Where beaver populations are negatively impacting the fishery resource, appropriate measures will be taken in cooperation with the State to control the localized population.*
156	FP			*Large woody debris will be left or repositioned in stream channels unless channel stability needs dictate otherwise*
157	FP	IV-27		Obtain water availability assurance for instream flows sufficient to meet fisheries' needs.
158	FP	IV-28		Determine with the TRPA and State fish and wildlife agencies the streams that will be maintained as excellent habitat and those that will be maintained in good condition. Schedule restoration to improve streams that are below the desired habitat condition.
159	FP	IV-28		Removal of debris from streams in order to stabilize the channel will be planned to obtain maximum improvement for fish habitat.
160	FP	IV-28		Maintain stream channel entrances to Lake Tahoe and Fallen Leaf Lake to allow unobstructed access of fish to upstream spawning sites.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
161	FP	IV-28		Maintain shaded bank conditions on rainbow trout streams by maintaining at least 50% of the stream bank site potential for herbaceous and shrub cover and at least 25% of the site potential for tree cover. Where natural tree cover is less than 20%, 80% of the potential should be retained. Thirty five to 70% of the stream should be shaded from 11:00 AM to 4:00 PM.
162	FP	IV-28		Manage lakeshore activities to keep disturbance from power boats at a low level in shallow water areas, especially prime lake spawning areas.
163	SNFPA	63	101	*Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species. Locate water drafting sites to avoid adverse effects to in stream flows and depletion of pool habitat. Where possible, maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features.*
164	SNFPA	63	104	*In stream reaches occupied by, or identified as "essential habitat" in the conservation assessment for, the Lahontan and Paiute cutthroat trout and the Little Kern golden trout, limit streambank disturbance from livestock to 10 percent of the occupied or "essential habitat" stream reach. (Conservation assessments are described in the record of decision.) Cooperate with State and Federal agencies to develop streambank disturbance standards for threatened, endangered, and sensitive species. Use the regional streambank assessment protocol. Implement corrective action where disturbance limits have been exceeded.*
165	SNFPA	64	108	*Determine if the level of coarse large woody debris (CWD) is within the range of natural variability in terms of frequency and distribution and is sufficient to sustain stream channel physical complexity and stability. Ensure proposed management activities move conditions toward the range of natural variability.*
166				**16. Structural Wildlife Habitat Improvement**
167	FP	IV-28	1	Secure water rights for wildlife water impoundments and other improvements.
168				**17. Structural Fish Habitat Management**
169	FP	IV-28	1	Assure fish movement past dams and other structures on streams where such would be feasible and cost effective.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
170	FP	IV-28	2	Secure water rights for dam construction and operation.
171				**18. Protection and Enhancement of Threatened and Endangered and Sensitive Plant Habitat**
172	FP	IV-28		Manage sensitive plants to ensure that species do not become threatened or endangered because of Forest Service activities. Prepare recovery plans for newly discovered populations.
173				*Establish Grass Lake as a Research Natural Area.*
174	FP	IV-28		Permit no collection of sensitive plant species except when authorized by the Regional Forester.
175	FP	IV-28		Manage uncommon plant communities to preserve their natural characteristics, specifically Osgood Swamp, Grass Lake, and Freel Cushion Plant Community.
176	FP	IV-28		Modify or exclude uses not compatible with survival of threatened or endangered species.
177	FP	IV-28		Require use of plant species native to the area or species approved for local use when revegetating disturbed sites and landscaping improvements.
178	FP	IV-28		Protect known populations of *Rorippa subumbellata* on beaches receiving high level of recreation use by fencing or other means to exclude disturbance. Artificially supplement natural propagation on natural habitat. Details of management are found in LTBMU Interim Management Prescriptions for this species, 1982.
179	FP	IV-28		Protect known populations of *Lewisia pygmaea* subsp. *longipetala*; *Corex paucifructus*; *Draba asterophora* v. *asterophora*; and *Draba asterophora* v. *macrocarpa* as detailed in LTBMU Interim Management Prescriptions, 1981.
180	SNFPA	65	118	*Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles.*
181				**Range**
182				**19. Range Allotment Management**

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
183	FP	IV-29	1	Reserve sufficient forage for grazing by recreation livestock (horses and mules) in allotments used by cattle and sheep. The amount to be reserved will be determined based upon estimates of current and projected equestrian or packer use.
184	FP	IV-29	2	Limit grazing or modify the grazing management system on deteriorating ranges to assist recovery.
185	FP	IV-29	3	Administer existing grazing allotments to achieve proper use and compatibility with other resource values.
186	FP	IV-29	4	Do not fill an allotment when non-use is taken by the permittee.
187	FP	IV-29	5	Consider the effects upon water quality, riparian areas, wildlife and fish before permitting grazing on a vacant allotment.
188				**20. Range Pasture Management**
189	FP	IV-29	1	Study pastures near the lakeshore, or in other areas where meadow lands are serving as a last filtering system for sediment and nutrients carried by surface water, to determine if special utilization standards or management practices should be applied.
190	FP	IV-29	2	Do not permit pastures for individually owned private livestock.
191	SNFPA	58	59	*In willow flycatcher sites receiving late-season grazing, monitor utilization annually using regional range analysis and planning guide. Monitor willow flycatcher habitat every 3 years using the following criteria: rooting depth cores for meadow condition, point intercepts for shrub foliar density, and strip transects for shrub recruitment and cover. Meadow condition assessments will be included in a GIS meadow coverage. If habitat conditions are not supporting the willow flycatcher or trend downward, modify or suspend grazing.*
192	SNFPA	58	63	*Evaluate proposals for new concentrated stock areas (for example, livestock handling and management facilities, pack stations, equestrian stations, and corrals) located within 5 miles of occupied willow flycatcher sites.*
193	SNFPA	65	117	*Assess the hydrologic function of meadow habitats and other special aquatic features during range management analysis. Ensure that characteristics of special features are, at a minimum, at Proper Functioning Condition, as defined in the appropriate Technical Reports (or their successor publications*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
194	SNFPA	65	118	*Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining bogs and fens include, but are not limited to, presence of: (1) sphagnum moss (Spagnum spp.), (2) mosses belonging to the genus Meessia, and (3) sundew (Drosera spp.) Complete initial plant inventories of bogs and fens within active grazing allotments prior to re-issuing permits*
195	SNFPA	65	119	*Locate new facilities for gathering livestock and pack stock outside of meadows and riparian conservation areas. During project-level planning, evaluate and consider relocating existing livestock facilities outside of meadows and riparian areas. Prior to re-issuing grazing permits, assess the compatibility of livestock management facilities located in riparian conservation areas with riparian conservation objectives*
196	SNFPA	65	120	*Under season-long grazing: For meadows in early seral status: limit livestock utilization of grass and grass-like plants to 30 percent (or minimum 6-inch stubble height).For meadows in late seral status: limit livestock utilization of grass and grass-like plants to a maximum of 40 percent (or minimum 4-inch stubble height; Determine ecological status on all key areas monitored for grazing utilization prior to establishing utilization levels. Use Regional ecological scorecards and range plant list in regional range handbooks to determine ecological status. Analyze meadow ecological status every 3 to 5 years. If meadow ecological status is determined to be moving in a downward trend, modify or suspend grazing. Include ecological status data in a spatially explicit Geographical Information System database; intensive grazing systems (such as rest-rotation and deferred rotation) where meadows are receiving a period of rest, utilization levels can be higher than the levels described above if the meadow is maintained in late seral status and meadow-associated species are not being impacted. Degraded meadows (such as those in early seral status with greater than 10 percent of the meadow area in bare soil and active erosion) require total rest from grazing until they have recovered and have moved to mid- or late seral status.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
197	SNFPA	66	121	*Limit browsing to no more than 20 percent of the annual leader growth of mature riparian shrubs and no more than 20 percent of individual seedlings. Remove livestock from any area of an allotment when browsing indicates a change in livestock preference from grazing herbaceous vegetation to browsing woody riparian vegetation*
198				**21. Range Improvements**
199	FP	IV-29	1	Permanent fences constructed in significant foreground view areas (such as highway corridors, recreation sites or urban fringes) will be of rustic design. Split rail or pole will be preferable to wire on wood post. Steel post and wire is generally unacceptable in high visibility areas, but useable when set back inconspicuously in heavily wooded areas.
200	FP	IV-29	2	Prevent livestock from entering recreation and urbanized areas, highway corridors, areas of steep or otherwise sensitive soils, and where riparian and other resource values could be damaged.
201	FP	IV-29	3	Consider snow conditions when designing type and stoutness of fence.
202	SNFPA	55	50	*To protect hardwood regeneration in grazing allotments, allow livestock browse on no more than 20 percent of annual growth of hardwood seedlings and advanced regeneration. Modify grazing plans if hardwood regeneration and recruitment needs are not being met*
203	SNFPA	56	51	*Grazing utilization in annual grasslands will maintain a minimum of 60 percent cover. Where grasslands are in satisfactory condition and annual precipitation is greater than 10 inches, manage for 700 pounds residual dry matter (RDM) per acre. Where grasslands are in satisfactory condition and annual precipitation is less than 10 inches, manage for 400 pounds RDM per acre. Where grasslands are in unsatisfactory condition and annual precipitation is greater than 10 inches, manage for 1,000 pounds RDM per acre; manage for 700 pounds RDM per acre where grasslands are in unsatisfactory condition and precipitation is less than 10 inches. Adjust these standards, as needed, based on grassland condition. This standard and guideline only applies to grazing utilization*
204	SNFPA	56	52	*Where professional judgment and quantifiable measurements find that current practices are maintaining range in good to excellent condition, the grazing utilization standards above may be modified to allow for the Forest Service, in partnership with individual permittees, to rigorously test and evaluate alternative standards*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
205				**Timber**
206				**22. Timber Management (General)**
207				*When timber management is selected to modify forest habitat, the location and extent of openings and the potential for type conversion, reforestation, and timber stand improvement will be evaluated and selected as necessary to ensure that wildlife objectives are achieved and to achieve optimum benefits for visual quality, recreation, and watershed protection.*
208				*In created openings larger than two acres, 4 – 6% of the green stand, preferably in dispersed clumps, will be retained for snag recruitment, except in areas where it would conflict with objectives for type conversion. In openings smaller than two acres, retention of trees for snag recruitment will be considered in project planning*
209	FP	IV-30	1	Use a full range of timber management practices including openings up to 5 acres, to maintain or enhance the multiple use values that have been identified in this plan. See Appendix D for additional discussion of silvicultural systems. Review land suitability for timber production at least every 15 years.
210	FP	IV-30	2	Planning for where, when and how timber will be cut will be conducted on a watershed by watershed basis. Introduction of forest openings shall be based on an inventory of early successional stage needs (see practice 13).
211	FP	IV-30	3	Utilize as much of a harvested tree as possible to keep residual treatment to a minimum.
212	FP	IV-30	4	Tractors may normally operate on slopes up to 30%. Cable and aerial systems shall normally be used on slopes greater than 30%.
213	FP	IV-30	5	Prohibit tractors in SEZ except where a firm, protective base of compacted snow or ice is present or where crossings exist that are designed to prevent adverse impact.
214	FP	IV-30	6	Avoid commercial log hauling on weekends and holidays.
215	FP	IV-30	7	Treat conifer stumps with borax within four hours of cutting to reduce the spread of *Fomes annosus* in developed recreation sites, administrative sites, and other high use areas where losses to this disease threaten the special value of the site.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
216	FP	IV-30	8	Provide firewood users with information that assists in achievement of TRPA visibility standard through particulate control. Included would be use of Best Available Control Technology (BACT) such as preparation of firewood for burning, use of high efficiency stoves, control of combustion, and information on special devices that can be attached to woodburning appliances.
217	FP	IV-30	9	Close temporary roads, or access ways created through public or commercial timber management activities, to prevent vehicle travel as soon as practical and/or upon completion of the use.
218	FP	IV-30	10	Incorporate Best Management Practices into the construction of landings or other temporary improvements for logging that involve earth moving, to help drain, stabilize and revegetate upon completion of logging activities.
219	FP		11	Selection of any particular method for pest treatment will be made at the project level based upon a site-specific analysis of the relative effectiveness, the environmental effects, and the cost of the feasible alternatives.
220	SNFPA	60	75	*For California spotted owl PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the activity center during the breeding season (March 1 through August 31), unless surveys confirm that California spotted owls are not nesting. Prior to implementing activities within or adjacent to a California spotted owl PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center.*
221	SNFPA	60	76	*For northern goshawk PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the nest stand within a protected activity center (PAC) is unknown, either apply the LOP to a ¼- mile area surrounding the PAC, or survey to determine the nest stand location.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
222	SNFPA	60	77-78	*The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be modified.*
223	SNFPA	61	79	*Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of California spotted owl and northern goshawk PACs per year on a forest.*
224	SNFPA	61	80	*For California spotted owl PACs: Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the acres in California spotted owl PACs in the 11 Sierra Nevada national forests. Monitor the number of PACs treated at a bioregional scale.*
225	SNFPA	61	81	*For northern goshawk PACs: Conduct mechanical treatments in no more than 5 percent per year and 10 percent per decade of the acres in northern goshawk PACs in the 11 Sierra Nevada national forests.*
226	SNFPA	61	83	*Apply a limited operating period, prohibiting vegetation treatments and road construction within ¼ mile of an active great gray owl nest stand, during the nesting period (typically March 1 to August 15). The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be reduced.*
227	SNFPA	62	88	*Protect marten den site buffers from disturbance from vegetation treatments with a limited operating period (LOP) from May 1 through July 31 as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
228				**23. Regeneration Harvest (Selection Cutting)**
229	FP	IV-30	1	Allow this practice to be applied on land capability classes 3, 4, 5, 6, and 7 that are accessed or can be efficiently accessed in the future.
230	FP	IV-30	2	Do not allow openings created by timber harvesting to exceed five acres. An opening is created when most of the vegetation is removed from an area larger than one acre. Naturally occurring areas of permanent low growth vegetation or barrens are not considered openings.
231	FP	IV-30	3	Regeneration openings will no longer exist when the average tree reaches 4 1/2 feet in height and the number of trees free to grow exceeds 200 per acre in red and white fir forest and 150 per acre in mixed conifer forest.
232	FP	IV-31	4	Disperse openings throughout the forest setting. Preferably, openings will not be adjoining. Where this is not practical, openings may have up to 15% contact on their periphery.
233	FP	IV-31	5	Allow the use of harvest techniques to maintain old growth conditions for dependent wildlife except during the nesting period or other critical periods.
234				**24. Sanitation Salvage Cut**
235	FP	IV-31	1	Allow this practice to be applied on all land capability classes including stream environment zones that are accessed.
236	SNFPA	52	13	*Determine the need for ecosystem restoration projects following large, catastrophic disturbance events (wildfire, drought, insect and disease infestation, windstorm, and other unforeseen events). Objectives for restoration projects may include limiting fuel loads over the long term, restoring habitat, and recovering economic value from dead and dying trees. In accomplishing restoration goals, long-term objectives are balanced with the objective of reducing hazardous fuel loads in the short term.*
237	SNFPA	52	13	*Salvage harvest of dead and dying trees may be conducted to recover the economic value of this material and to support objectives for reducing hazardous fuels, improving forest health, reintroducing fire, and/or re-establishing forested conditions.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
238	SNFPA	52	13	*Design projects to reduce potential soil erosion and the loss of soil productivity caused by loss of vegetation and ground cover. Examples are activities that would: (1) provide for adequate soil cover in the short term; (2) accelerate the dispersal of coarse woody debris; (3) reduce the potential impacts of the fire on water quality; and (4) carefully plan restoration/salvage activities to minimize additional short-term effects.*
239	SNFPA	52	13	*Design projects to protect and maintain critical wildlife habitat. Examples are activities that would: (1) avoid areas where forest vegetation is still largely intact; (2) provide for sufficient quantities of large snags; (3) maintain existing large woody material as needed; (4) provide for additional large woody material and ground cover as needed; (5) accelerate development of mature forest habitat through reforestation and other cultural means; and (6) provide for a mix of seral stages over time.*
240	SNFPA	52	13	*Design projects to manage the development of fuel profiles over time. Examples are activities that would: (1) remove sufficient standing and activity generated material to balance short-term and long-term surface fuel loading; and (2) protect remnant old forest structure (surviving large trees, snags, and large logs) from high severity re-burns or other severe disturbance events in the future.*
241	SNFPA	52	13	*Design projects to recover the value of timber killed or severely injured by the disturbance. Examples are activities that would: (1) conduct timber salvage harvest in a timely manner to minimize value loss; (2) minimize harvest costs within site-specific resource constraints; and (3) remove material that local managers determine is not needed for long-term resource recovery needs.*
242	SNFPA	52	14	*In post fire restoration projects for large catastrophic fires (contiguous blocks of moderate to high fire lethality of 1,000 acres or more), generally do not conduct salvage harvest in at least 10 percent of the total area affected by fire*
243	SNFPA	52	15	*Use the best available information for identifying dead and dying trees for salvage purposes as developed by the Pacific Southwest Region Forest Health Protection Staff*
244	SNFPA	53	16	*Outside of WUI defense zones, salvage harvests are prohibited in PACs and known den sites unless a biological evaluation determines that the areas proposed for harvest are rendered unsuitable for the purpose they were intended by a catastrophic stand-replacing event*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
245	SNFPA	53	17	*Consider ecological benefits of retaining small patches of mortality in old forest emphasis areas*
246				**25. Special Cut**
247	FP	IV-31	1	This practice may be applied on all land capability classes, including stream environment zones, following analysis and documentation in an environmental assessment that demonstrates the project is necessary to meet resource objectives and that the proposed treatment methods provide adequate resource protection.
248				**26. Thinning**
249	FP	IV-31	1	Allow this practice to be applied on land capability classes 3, 4, 5, 6, and 7 that are accessed, or can be efficiently accessed in the future, where the cut trees can be harvested for consumptive purposes.
250	SNFPA	50	6	*For all mechanical thinning treatments, design projects to retain all live conifers 30 inches dbh or larger. Exceptions are allowed to meet needs for equipment operability*
251	SNFPA	51	7	*The following 8 items apply to mechanical thinning treatments in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) outside WUI defense zone, and do not apply to the eastside pine type*
252	SNFPA	51	7	*Design projects to retain at least 40 percent of the existing basal area. The retained basal area should generally be comprised of the largest trees*
253	SNFPA	51	7	*Where available, design projects to retain 5 percent or more of the total treatment area in lower layers composed of trees 6 to 24 inches dbh within the treatment unit.*
254	SNFPA	51	7	*Design projects to avoid reducing pre-existing canopy cover by more than 30 percent within the treatment unit. Percent is measured in absolute terms (for example, canopy cover at 80 percent should not be reduced below 50 percent.*
255	SNFPA	51	7	*Within treatment units, at a minimum, the intent is to provide for an effective fuels treatment.*
256	SNFPA	51	7	*Where existing vegetative conditions are at or near 40 percent canopy cover, projects are to be designed remove the material necessary to meet fire and fuels objectives.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
257	SNFPA	51	7	*Within California spotted owl Home Range Core Areas: Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover averaged within the treatment unit. Exceptions are allowed in limited situations where additional trees must be removed to adequately reduce ladder fuels, provide sufficient spacing for equipment operations, or minimize re-entry. Where 50 percent canopy cover retention cannot be met for reasons described above, retain at least 40 percent canopy cover averaged within the treatment unit.*
258	SNFPA	51	7	*Outside of California spotted owl Home Range Core Areas: Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover within the treatment unit. Exceptions are allowed where project objectives require additional canopy modification (such as the need to adequately reduce ladder fuels, provide for safe and efficient equipment operations, minimize re-entry, design cost efficient treatments, and/or significantly reduce stand density.) Where canopy cover must be reduced below 50 percent, retain at least 40 percent canopy cover averaged within the treatment unit.*
259	SNFPA	51	7	*Within California spotted owl PACs, where treatment is necessary, remove only material needed to meet project fuels objectives. Focus on removal of surface and ladder fuels.*
260	SNFPA	51	8	*For mechanical thinning treatments outside defense zones in the eastside pine type: in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6), design projects to retain 30 percent of the existing basal area. The retained basal area should be generally comprised of the largest trees. Projects in the eastside pine type have no canopy cover retention standards and guidelines*
261	SNFPA	51	9	*Standards and guidelines # 6, 7, and 8 above apply only to mechanical thinning harvests specifically designed to meet objectives for treating fuels and/or controlling stand densities*
262				**27. Timber Stand Improvement**
263	FP	IV-31	1	Allow this practice to be applied on land capability classes 3, 4, 5, 6, and 7 that are accessed, or can be efficiently accessed in the future, except within developed recreation sites.
264				**28. Reforestation**

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
265				*Created openings will not be reforested when type conversion for vegetative diversity is determined appropriate in the project level planning*
266	FP	IV-32		Site preparation before reforestation will disturb only enough of the ground cover (grasses, forbs, shrubs and litter) to provide a planting bed. On harvest areas, disturbance from the logging operation should provide adequate ground preparation. Additional preparation may be planned if determined necessary following site specific analysis.
267	SNFPA	49-50		*Where young plantations (generally Pacific Southwest Region size classes 0x, 1x, 2x) are included within area treatments, apply the necessary silvicultural and fuels reduction treatments to: (1) accelerate the development of key habitat and old forest characteristics, (2) increase stand heterogeneity, (3) promote hardwoods, and (4) reduce risk of loss to wildland fire . In size class 2x plantations, treatments should be designed to reduce fire intensity, rate of fire spread and tree mortality. Design a sequence of fuel reduction projects to achieve the following standards: 3 inches and smaller surface fuel load: less than 5 tons per acre, less than 0.5 foot fuel bed depth, stocking levels that provide well-spaced tree crowns (for example, approximately 200 trees per acre in 4 inch dbh trees, less than 50 percent surface area with live fuels (brush); tree mortality less than 50 percent of the existing stocking under 90th percentile fire weather conditions (2x type only).*
268	SNFPA	52	12	*Promote shade intolerant pines (sugar and Ponderosa) and hardwoods.*
269				**Water**
270				**29. Water Use Management**
271	FP	IV-33	1	Arrange for and secure water rights for existing and foreseeable future Forest Service consumptive uses, including administrative, recreation, agriculture, erosion control, irrigation, and evaporative losses.
272	FP	IV-33	2	Obtain water availability assurances for existing and foreseeable future non-consumptive uses, including minimum instream flows and reservoir level maintenance for fish, wildlife, boating, swimming, and aesthetics.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
273	FP	IV-33	3	Prevent loss of groundwater quality and quantity, and where possible, through the development of a groundwater management plan in cooperation with other agencies. Where groundwater is found to be degrading, initiate measures to determine causes, effects and mitigation measures.
274	FP	IV-33	4	Conduct a geologic and geotechnical analysis of all groundwater development projects which may adversely impact the groundwater table.
275	FP	IV-33	5	Work towards connecting domestic water supply systems at developed recreation and administrative sites to commercial water systems, if quality, volume, and cost of operation significantly improve existing conditions.
276	FP	IV-33	6	Implement water conservation measures at developed recreation and administrative sites.
277	FP	IV-33	7	Use plants which do not require long term irrigation in order to conserve water in revegetation projects.
278				**30. Water Quality Maintenance and Improvement**
279	FP	IV-33		Utilize the land capability system as described in Land Capability Classification of the Lake Tahoe Basin, Calif/Nev, A Planning Guide, Bailey, 1974, as a guide for locating and planning the kind and intensity of management activities.
280	FP	IV-33		Ensure that permanent land disturbance and impervious surface coverage does not exceed that recommended by the land capability system. Consider disturbance that partially and/or temporarily impairs the ability of soil to resist erosion and absorb, utilize and store nutrients as recoverable and not subject to the same limits as impervious coverage.
281	FP	IV-33		Implement Best Management Practices (BMP) to meet water quality objectives and maintain and improve the quality of surface water on the forest. Methods and techniques for applying the BMP will be identified during project level environmental assessments and incorporated into the associated project plan and implementation documents. (See Appendix H).
282	FP	IV-33		Prohibit soil disturbing activities from October 15 to May 1 of each year. Waivers will be granted individually. Assure that permanent or temporary erosion control measures are in place for the winter season.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
283	FP	IV-33		Manage existing naturally functioning stream environment zones (SEZ) lands in their natural hydrologic condition with few exceptions.
284	FP	IV-33		Identification and mapping of stream environment zone (SEZ) will be through the determination of: a) Wetlands, meadows, and other areas of riparian vegetation; b) One hundred year flood plain; c) Ephemeral stream courses and soil areas associated with high runoff or high water tables; and d) Area within 25 feet of first order stream, 50 feet of second order stream, and 100 feet of third order stream.
285	FP	IV-33		Permit outdoor recreation facilities in SEZ and on land capability classes 1, 2 and 3 where they are a part of long range development plans, where the nature of the activity must be so sited, where there is no feasible alternative, where it is fully mitigated, and where disturbed SEZ beyond allowed coverage is restored at 150% of the amount disturbed.
286	FP	IV-34		Permit public works projects (roads, trails, utilities, etc.) in SEZ and on land capability classes 1, 2 and 3 where necessary for health, safety or environmental protection, where there is no reasonable alternative, where the impacts are fully mitigated and where disturbed SEZ beyond allowed coverage is restored at 150% of the amount disturbed.
287	FP	IV-34		Permit replacement of existing land coverage in SEZ where the project will reduce impacts on SEZ and will not impede restoration efforts.
288	FP	IV-34		Insure that temporary erosion control measures will be in place prior to commencing any soil disturbing activities.
289	FP	IV-34		Do not allow solid and liquid wastes to be discharged on or in the soil or water, with the exception of vegetative debris from forest management practices, clean earth and rock disposed of in approved locations, and wastes for which special waivers have been granted by state water quality protection agencies.
290	FP	IV-34		Permit no effluent disposal areas or dumps on national forest land.
291	FP	IV-34		Maintain emergency caches for hazardous material cleanup in cooperation with other agencies.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
292	FP	IV-34		Ensure that vegetation and soil remain undisturbed in the unstable area of the shorezone, except as necessary for public safety or to provide for uses that by their nature require location within the shorezone. (The unstable area of the shorezone is where littoral and/or wave action processes have their greatest influence. The area may vary considerably in width.)
293	FP	IV-34		Manage the use of chemical and biological materials used to aid in snowmaking so as not to degrade either surface or groundwater.
294	FP	IV-34		Restore damaged watersheds and sites contributing to water quality degradation. Schedule restoration of land identified in the watershed improvement needs inventory to be completed within 20 years. The priority for restoration will be 1) stream environment zones; 2) shorezones; and 3) high hazard land.
295	FP	IV-34		Attain an overall 5% increase in the acreage of naturally functioning SEZ land in the basin by restoring disturbed SEZ land.
296	FP	IV-34		Use fertilizer only where necessary to establish vegetation associated with restoration of disturbed areas and to maintain existing turf. Utilize the TRPA guidelines for fertilizer use.
297	FP	IV-34		Assist special use permittees in the planning and design of Best Management Practices to apply to the area of their permitted use to meet water quality standards.
298	SNFPA	63	95	*For waters designated as "Water Quality Limited" (Clean Water Act Section 303(d)), participate in the development of Total Maximum Daily Loads (TMDLs) and TMDL Implementation Plans. Execute applicable elements of completed TMDL Implementation Plans.*
299	SNFPA	63	96	*Ensure that management activities do not adversely affect water temperatures necessary for local aquatic- and riparian-dependent species assemblages*
300	SNFPA	63	97	*Limit pesticide applications to cases where project level analysis indicates that pesticide applications are consistent with riparian conservation objectives.*
301	SNFPA	63	99	*Prohibit storage of fuels and other toxic materials within RCAs and CARs except at designated administrative sites and sites covered by a Special Use Authorization. Prohibit refueling within RCAs and CARs unless there are no other alternatives. Ensure that spill plans are reviewed and up-to-date.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
302				**31. Road or Trail Closures**
303	FP	IV-34	1	Use temporary road closures where necessary to protect water quality until the road is reconstructed to suitable standard.
304	FP	IV-34	2	Employ seasonal closure to restrict vehicle travel when the road surface can be damaged or water quality may be adversely affected. Specific information concerning closure of roads by gates is contained in the LTBMU Gate Management Plan, July 1982, and is periodically amended. Location of the gate, period of closure, type of lock, and authorization for entry are contained in the plan.
305				**32. Water Flow Timing**
306	FP	IV-34	1	Coordinate with California Department of Fish and Game in the operation and maintenance of small water regulating dams installed to maintain stream flows for fish.
307				**33. Water Yield Improvement**
308	FP	IV-34	1	Permit weather modification to increase precipitation unless it is shown that the modification will produce permanent substantial changes in the land use or significant adverse environmental effects.
309				**Minerals**
310				**34. Minerals Management**
311	FP	IV-35	1	Approve locatable mineral operations under a plan of operations which assures that water quality and other environmental factors can be maintained or enhanced. Consider on a site specific basis through NEPA procedures.
312	FP	IV-35	2	Authorize extraction of leasable minerals through lease documents only where water quality and other environmental factors can be maintained or enhanced. Consider on a site specific basis through NEPA procedures.
313	FP	IV-35	3	Approve no extraction of common variety minerals on currently undeveloped sites. Extraction may be authorized on sites where material had been previously removed, provided that (1) the plan for removal demonstrates partial or full rehabilitation of the site; and (2) that water quality and other environmental factors will be maintained or enhanced throughout the extraction process.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
314	FP	IV-35	4	Stockpiling of rock, soil and other earthen material, removed from grading operations, may be approved. Measures will be employed that prevent stockpiled material from being washed into stream channels or adding nutrients to, or otherwise adversely effecting, groundwater. Preferred locations for stockpiling will be on sites where the material could be used in onsite rehabilitation if not reused elsewhere.
315	FP	IV-35	5	Insure that mineral operators meet appropriate laws and regulations (36 CFR 228 and 293.14) that apply. Work with the state, regional and local governments in the development and review of "Plans of Operation".
316	FP	IV-35	6	Prior to authorizing operations within withdrawn areas, valid existing rights will be verified. Valid existing rights will be recognized, but the integrity for which the area was set aside will be maintained.
317	SNFPA	58	64	*Ensure that plans of operation, reclamation plans, and reclamation bonds address the costs of: (1) removing facilities, equipment, and materials; (2) isolating and neutralizing or removing toxic or potentially toxic materials; (3) salvaging and replacing topsoil; and (4) preparing the seed bed and revegetating to meet the objectives of the land allocation in which the operation is located*
318	SNFPA	59	65	*Ensure that mine owners and operators limit new road construction, decommission unnecessary roads, and maintain needed roads consistent with Forest Service roads policy and management direction for the land allocation*
319	SNFPA	59	66	*Require mine reclamation to be conducted in a timely manner*
320	SNFPA	59	67	*Inspect and monitor mining-related activities on a regular basis to ensure compliance with laws, regulations, and operating plans. Base the frequency of inspections and monitoring on the potential severity of mining activity-related impacts*
321	SNFPA	59	68	*During mining-related activities, limit the clearing of trees and other vegetation to the minimum necessary. Clearing of vegetation should be pertinent to the approved phase of mineral exploration and development*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
322				**Lands**
323				**35. Land and Resource Management Planning**
324	FP	IV-35		Augment the Interior Department's National Natural Landmark program (administered by the Park Service) by: a) cooperating in the evaluation of the entire Lake Tahoe area as a Priority 1 rated candidate for status in the river and lakes major theme; b) considering Grass Lake Moss Bog for status if it does not become a part of the Research Natural Area system; c) considering the addition of national forest land to the Emerald Bay State Park registered area; d) considering the inclusion of Osgood Bog and the Freel Peak Cushion Plant Community into the system.
325	FP	IV-35		Direct the Special Interest Area program by: a) managing the Tallac Historic Site as a SIA; b) evaluating Emerald Bay, Osgood Bog, Freel Peak Cushion Plant Community, and Taylor Creek Wetlands during this planning period for inclusion into the system; c) monitoring Grass Lake Moss Bog, Hell Hole, Floating Island Lake, Pope and Baldwin Marshes, Cave Rock, Glacial Moraine Deposits, and Ward and Blackwood Canyons and managing them to protect their special features for possible future evaluations; d) identifying new areas having promise for inclusion.
326	FP	IV-36		Plan recreation development with the states of Nevada and California with the following goals: a) Compatibility of development; b) Comparable fees; c) Consistency of rules with which the public must comply (Laws governing national forest lands are different than the state laws governing the state parks and therefore exact uniformity is not possible).
327	FP	IV-36		To the extent feasible, data should be assembled and measured in a manner comparable with that used by the TRPA.
328				*Implement the Wild and Scenic Rivers Act by conducting an eligibility assessment for the Truckee River. If the river, or segment thereof, is eligible, schedule a suitability assessment. Until a decision is made regarding the river's status, the following interim management will be in effect:*
329				*1. To the extent that the Forest Service is authorized under law to control stream impoundments and diversions, the free flowing characteristics of the Truckee River will not be modified.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
330				*2. Outstandingly remarkable values for the Truckee River will be identified, protected and, to the extent practicable, enhanced.*
331				*3. Management and development of the Truckee River and its corridor will not be modified to the degree that potential eligibility or classification will be affected (i.e., cannot be changed from wild to scenic or scenic to recreational)*
332				**36. Special Land Use (Non-Recreation)**
333	FP	IV-36	1	Consider new land use proposals on the merits of each case. Applicants must demonstrate that private land is not available, capable, or suitable. Proponents will normally be expected to do their own environmental analysis and submit the documentation in an environmental assessment or impact statement acceptable to the Forest Supervisor. (Utilities necessary to provide adequate, reliable service for the urban development approved in the TRPA Regional Plan will be considered as essential public services).
334	FP	IV-36	2	Consider applications for electronic facilities and antenna sites different than the above sites on a case by case basis.
335	FP	IV-36	3	Direct applicants for major trans-Sierra right-of-way to established corridors such as Interstate 80 as the preferred location.
336	FP	IV-36	4	Obligate the minimum amount of land for a period no greater than needed to exercise the privileges granted. Improvements will be designed to utilize a minimum of land coverage.
337	FP	IV-36	5	Locate all types of transmission lines outside of view areas where possible and require joint use of existing rights-of-way unless the proponent can clearly show joint use is not practical.
338	FP	IV-36	6	Install power distribution lines up to 33kv underground in existing or new roadway prisms unless the proponent can clearly show that this is not practical or another method of installation would cause less long term environmental damage.
339	FP	IV-36	7	Insure that existing above ground utilities will normally be undergrounded by priorities established in the R-5 Undergrounding Master Plan.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
340	FP	IV-36	8	Coordinate the review of applications for power licenses with FERC, TRPA, and other agencies. Process applications for uses associated with a license through special use procedures.
341	FP	IV-36	9	Represent permittees in deliberations with the TRPA for project review. Exceptions to this rule include, but are not confined to, cases where the project is partially on non-national forest land.
342	FP	IV-36	10	Require a permit applicant to obtain permission to cross private land where a public right of way does not exist.
343				**37. Withdrawals**
344	FP	IV-37	1	In compliance with PL 94-579 (Section 204), review all existing withdrawals in conjunction with the Secretary of Interior to determine the need and validity for continuation. Recommend revocation of those no longer needed. Complete the review by October 21, 1991.
345	FP	IV-37	2	Initiate withdrawals from mineral and other forms of entry for administrative sites, developed public recreation areas, special interest areas, national natural landmarks, wetlands, and areas highly valued for use by the public.
346	SNFPA	66	123	*Determine which critical aquatic refuges or areas within critical aquatic refuges are suitable for mineral withdrawal. Propose these areas for withdrawal from location and entry under U.S. mining laws, subject to valid existing rights, for a term of 20 years*
347	SNFPA	66	124	*Approve mining-related plans of operation if measures are implemented that contribute toward the attainment or maintenance of aquatic management strategy goals*
348				**38. Rights-of-Way**
349	FP	IV-37	1	Acquire rights-of-way for roads, trails, or utilities where those of State, county, municipal, or special service jurisdictions are inadequate for Forest Service use.
350	FP	IV-37	2	Obtain full public access except in the few instances where administrative access will be sufficient.
351				**39. Property Boundary Location**
352	FP	IV-37	1	Maintain corner and boundary markers.
353	FP	IV-37	2	Maintain land title and survey records.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
354				**40. Cooperative Technical Assistance**
355	FP	IV-37	1	Serve as part of the Advisory Planning Commission of the Tahoe Regional Planning Agency.
356	FP	IV-37	2	Serve on all technical review teams involving wildland resource management in the basin.
357				**41. Landownership Adjustment - L&WCF and other Authority**
358	FP	IV-38	1	Expand national forest land ownership in the basin through purchase, donation and/or exchange in order to achieve the balance of long term public benefits sought in this plan and that of the TRPA Regional Plan.
359	FP	IV-38	2	Allow national forest land in the basin to be exchanged for other lands that serve higher public use. In such exchanges, preference will be given to other public agencies which devote land to public use.
360	FP	IV-38	3	Insure that recreation capacity acquired through acquisition will be considered an increase to the national forest "fair share".
361				**42. Land Acquisition Santini-Burton Act 96-586**
362	FP	IV-38	1	Acquire tracts of land that are eligible because of environmental sensitivity. These lands are: stream environment zone; land capability class 1, 2 and 3; unimproved man modified land causing unacceptably high rates of sedimentation; and shorezone classes 1, 2 and 3. For details, reference the 63 Land Acquisition Program maps.
363	FP	IV-38	2	Coordinate the Forest Service acquisition program with the similar programs in California and Nevada so as not to duplicate effort. Offers to purchase will be made to any willing seller.
364	FP	IV-38	3	Decide transfers to state or local jurisdiction on a case-by-case basis until criteria are developed. The Act authorizes the Forest Service to transfer parcels to units of state and local governments where such parcels are found unsuitable for national forest administration.
365				**Soils**
366				**43. Soil Resource**
367	FP	IV-39	1	Maintain surface litter, duff, and adequate coarse woody debris to maintain organic matter reserves and recycle nutrients.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
368	FP	IV-39	2	Maintain protective groundcover (duff, litter, or slash) or vegetative cover to minimize soil erosion. Areas in which the soil resource is continuously impacted by recreation use will be considered an ongoing priority.
369	FP	IV-39	3	Minimize soil displacement when grading slopes or when piling brush or slash.
370	FP	IV-39	4	Where past management activities have reduced soil productivity, improve soil productivity by respreading displaced topsoil, by using tillage to increase porosity, by increasing nutrient supplies through the addition of fertilizer (utilizing the TRPA guidelines for fertilizer use), or by increasing nutrient holding capacity through the addition of organic matter.
371	FP	IV-39	5	Where soils are susceptible to compaction and puddling, minimize the area covered by heavy equipment or operate when soils are least susceptible to damage.
372	SNFPA	52	13	*Design projects to reduce potential soil erosion and the loss of soil productivity caused by loss of vegetation and ground cover. Examples are activities that would: (1) provide for adequate soil cover in the short term; (2) accelerate the dispersal of coarse woody debris; (3) reduce the potential impacts of the fire on water quality; and (4) carefully plan restoration/salvage activities to minimize additional short-term effects*
373	SNFPA	66	122	*Recommend restoration practices in: (1) areas with compaction in excess of soil quality standards, (2) areas with lowered water tables, or (3) areas that are either actively down cutting or that have historic gullies. Identify other management practices, for example, road building, recreational use, grazing, and timber harvests, that may be contributing to the observed degradation*
374				**Facilities**
375				**44. Road Construction and Reconstruction**
376	FP	IV-40	1	Prohibit road building in areas of high mass soil instability. Areas of moderate instability will be engineered to protect water quality and scenic value. Site specific geotechnical analysis will be used to provide recommendations for road building.
377	FP	IV-40	2	Integrate parking facilities with a road system at wilderness and other trailheads, viewpoints, special attractions, and recreation sites.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
378	FP	IV-40	3	Limit construction to slopes of less than 30% except for short segments where necessary to bridge steep terrain within otherwise moderately sloped areas. Allow reconstruction of roads on slopes exceeding 30% where BMP are fully utilized to mitigate impacts.
379	FP	IV-40	4	Prioritize forest system road reconstruction in following order:1. Public safety - elimination of known hazards; 2. Correction of water quality problems; a. Reduce or eliminate impacts in stream environment zones; b. Installation of drainage; c. Stabilize road surface, ditches, cuts and fills; 3. Protect road investment; 4. Produce planned outputs; 5. Improve quality of recreation and administrative services; 6. Expand recreation service.
380	FP	IV-40	5	Stabilize soils along the existing transportation system, obliterate and stabilize unneeded roads.
381	FP	IV-40	6	Share construction and reconstruction costs on roads serving both special use sites and general public use sites or areas on a basis proportionate to use.
382	FP	IV-40	7	Roads that are managed to provide OHV opportunities will be reconstructed to provide a challenging experience for recreationists while providing resource protection. In some cases roads presently passable to passenger cars will be reconstructed so they are passable only to four-wheel drive or high clearance vehicles.
383	SNFPA	59	70	*To protect watershed resources, meet the following standards for road construction, road reconstruction, and road relocation: (1) design new stream crossings and replacement stream crossings for at least the 100-year flood, including bedload and debris; (2) design stream crossings to minimize the diversion of streamflow out of the channel and down the road in the event of a crossing failure; (3) design stream crossings to minimize disruption of natural hydrologic flow paths, including minimizing diversion of streamflow and interception of surface and subsurface water; (4) avoid wetlands or minimize effects to natural flow patterns in wetlands; and (5) avoid road construction in meadows.*
384	SNFPA	61	82	*Mitigate impacts where there is documented evidence of disturbance to the nest site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb nest sites.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
385	SNFPA	61	83	*Apply a limited operating period, prohibiting vegetation treatments and road construction within ¼ mile of an active great gray owl nest stand, during the nesting period (typically March 1 to August 15) . The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be reduced.*
386	SNFPA	62	87, 89	*Mitigate impacts where there is documented evidence of disturbance to the den site from existing recreation, off-highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off-highway vehicle routes, and recreational and other developments for their potential to disturb den sites.*
387				**45. Temporary Road Construction**
388	FP	IV-40	1	Construct temporary roads when there is only a one-time need for a transportation facility. Obliterate the road and return to resource production within one year of the use when the one-time need is fulfilled.
389	FP	IV-40	2	Locate and design temporary roads with the least amount of cut and fill, and the fewest stream or water channel crossings, so that the land can be restored with no permanent impact.
390				**46. Road Maintenance**
391	FP	IV-40	1	Give priority for maintenance the following order:1. Public safety - elimination of known hazards. 2. Correction of water quality problems. a. Reduce or eliminate impacts in stream environment zones. b. Installation of drainage. c. Stabilize road surface, ditches, cuts and fills. 3. Protect road investment. 4. Produce planned outputs. 5. Improve quality of recreation and administrative services. 6. Expand recreation service.
392	FP	IV-41	2	Stabilize cut and fill slopes; protect drainage structures and drainage ways; provide sediment trapping devises; install infiltration trenches.
393	FP	IV-41	3	Obliterate and stabilize unneeded roads.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
394	FP	IV-41	4	Share maintenance costs on roads serving both special use sites and general public use sites and areas on a basis proportionate to use. Develop agreements with individual permittees, or associations of permittees, to perform the maintenance required.
395				**47. Trail Construction/Reconstruction**
396	FP	IV-41	1	All trails receiving significant use will be managed as part of the trail system according to the Trails Management Handbook, or closed and rehabilitated. Trails not meeting construction standards will be reconstructed. Special use permittees will be allowed to use only system trails. Where construction or reconstruction of trails is required for uses under permit, permittee will bear cost of required work.
397	FP	IV-41	2	Increase the trail system outside of wilderness for recreation use.
398	FP	IV-41	3	Construct the Rim Trail to encircle the Lake Tahoe Basin approximately on the hydrographic boundary as described in concept within a Decision Notice and EA dated July 1983. The trail and primary feeders will be all-purpose design class. Construction and maintenance will be through the Tahoe Rim Trail Association, a volunteer group.
399	FP	IV-41	4	The Summer Off Highway Vehicle Management Map shall provide general guidance on where and in what priority OHV routes will be studied for construction. Zones 1 and 2 will normally provide no summer OHV opportunities and no new routes will be considered. Zone 3 presently provides OHV opportunities and the construction of short segments designed to enhance existing routes by the creation of loops will be considered. Though existing roads and trails may be designated for OHV use, no major new OHV routes will be constructed. Zone 4 presently provides OHV opportunities and may have the potential for constructing major OHV systems after study. In this zone, trail relocation and construction will have highest priority to be considered as part of system planning during the first decade. In zones 3 and 4, many routes presently being used will be closed and revegetated where unacceptable social or environmental affects are occurring and cannot be mitigated. The Summer OHV Management Map will be updated when completed transportation system planning results in changes in management strategy.
400	FP	IV-41	5	Determine priorities and establish a schedule to rehabilitate system trails to include water quality standards applicable in the basin. The standard requires more cross-drains and protective surfacing than would be typical on system trails.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
401	FP	IV-41	6	OHV trails will be designed and managed to ensure that trails will not exceed 48" in design width to only accommodate ATV, quad or smaller sized OHVs. OHV trails will be designated away from urban areas and away from foot trails whenever possible to avoid conflicts with residents. OHV trails shall be signed to a level that clearly identifies the route as designated throughout its length. Unauthorized trails that feed into existing designated routes will be identified and closed to OHV use.
402	FP	IV-41	7	OHV trails will be designed when appropriate and environmentally feasible, to form "loops," to enhance user enjoyment. Access to OHV trail systems shall be through designated trailheads with opportunities for limited parking where appropriate. OHV trail systems will require bridges or similar structures when designated over streams. Fencing and similar barriers will be constructed as appropriate to minimize random access to the OHV trail system.
403	FP	IV-41	8	OHV trails will be monitored for resource impacts, especially concerning soil and water quality. Trails will be closed if user impacts create resource impacts that cannot be mitigated.
404	FP	IV-41	9	Trails constructed through unstable terrain will utilize geologic evaluation and geotechnical design to minimize potential impacts.
405				**48. Trail Maintenance**
406	FP	IV-42	1	Use the LTBMU Trail Management Plan, Nov. 25, 1980, as a guide for short and long range direction for maintenance of trails.
407	FP	IV-42	2	Define each system trail by design class (All-purpose, Principal Wilderness, Primitive Hiker-Horse, Primitive Hiker, or Special Purpose) and assign a maintenance level from 1 to 5. Existing trails not presently in the system will be evaluated individually to determine appropriateness of inclusion. Existing non-system trails determined to not meet standards for inclusion in the system shall be closed and rehabilitated to prevent resource degradation.
408	FP	IV-42	3	Manage the Hawley Grade Trail and the Pope-Baldwin Bicycle Trail as National Recreation Trails.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
409	FP	IV-42	4	Manage the Pacific Crest Trail as described in the Pacific Crest Trail Maintenance Plan, LTBMU and Eldorado National Forest, September 1981.
410	FP	IV-42	5	OHV system trails will be managed in accordance with standards and guidelines as found in FSH 7709 Trails Handbook. OHV trails must be carefully maintained to ensure that signing is well maintained throughout the system. Vandalized or weathered signs will be replaced as a priority maintenance element whenever they are discovered. During maintenance inspections unauthorized OHV trail routes will be identified should they develop, and will be closed as appropriate. Emphasis will be placed on limiting average OHV trail width to 48". Reverse grading will be encouraged over the installation of waterbars on OHV trail systems to divert water runoff. Logs of sufficient diameter to form a "backstop" will be used to stabilize deep banking turns on OHV routes. Areas where the tread has been displaced by OHV activity will be stabilized where appropriate using cinder blocks or similar tread stabilizing materials. Routes will be rerouted as appropriate to change grade or slope where OHV activity is creating adverse resource impacts.
411	FP	IV-42	6	Trails that are developed and used primarily by special use permittees will be maintained to Forest Service standards by the permittees. Where special use permittees and the general public share the use of trails, expense of maintenance will be shared proportionate to use.
412				**49. Facility Construction/Reconstruction**
413	FP	IV-42	1	Comply with state energy efficiency standards; install TRPA approved woodburning stoves and other appliances; and encourage the use of solar energy opportunities.
414	FP	IV-42	2	Confine developments to land capability classes 4-7 except where the nature of the improvement requires development in environmentally sensitive areas (class 1, 2 and 3 and SEZ).
415	FP	IV-42	3	Locate, design and maintain structures, signs, and lighting to harmonize with surrounding natural features or to enhance the characteristics of the manmade environment where such is dominant.
416				**50. Facility Operation and Maintenance**
417	FP	IV-42	1	Utilize appropriate BMP to provide soil stability, runoff infiltration, and revegetation.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
418	FP	IV-42	2	Retrofit facilities to comply with State energy efficiency standards where feasible; install TRPA approved woodburning stoves and other appliances when existing units are replaced; and encourage the use of solar energy.
419	FP	IV-42	3	Retrofit all administrative sites to incorporate BMP's when construction or reconstruction occurs, or by the year 2000, whichever occurs first.
420				**Protection**
421				**51. Fire Prevention**
422	FP	IV-43	1	Manage vegetation and plan uses with full recognition of the need to provide reasonable protection from wildfire.
423	FP	IV-43	2	Give priority to fireproofing and fuel reduction measures in developed recreation sites, areas of concentrated public use, areas adjacent to urbanized development, and areas of fuel concentration that exceed established standards.
424				**52. Fire Detection and Suppression**
425	FP	IV-43	1	The wildfire response strategy for areas within or adjacent to urbanized areas with associated high values at risk is "Control" of all wildfires at Fire Intensity Level (FIL) 1 with a maximum size objective of 1/4 acre or less and at FIL 2-5 control of all fires at 2 acres or less.
426	FP	IV-43	2	The wildfire response strategy for areas of forested lands outside of urbanized areas, but not including high elevation alpine areas, is "Containment" of fires at all FIL's with a maximum size objective of 10 acres.
427	FP	IV-43	3	The wildfire response strategy for high elevation alpine areas exhibiting non-continuous fuels and natural barriers is "Confinement" of all fires at all FIL with a maximum size objective of 25 acres.
428	FP	IV-43	4	Fire intensity, fire spread potential, the probability of adverse resource effects and air quality considerations will dictate the maximum wildfire size and response strategy on forested lands outside of urbanized areas and on high elevation alpine areas.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
429	FP	IV-43	5	Use all types of firefighting equipment in emergencies when there is threat to human life and property or where the resource value saved is clearly greater than the damage done through its use. In other than these conditions, disturbance to soil and stream environment zones and to visual quality, will be minimized.
430	FP	IV-43	6	Coordinate fire management with other protection agencies and districts.
431	FP	IV-43	7	Take prompt measures after forest fires to reduce adverse effects on water quality, scenic quality, recreation use, wildlife, and timber health.
432	FP	IV-43	8	Encourage all private development within the national forest to be in a fire protection district.
433	FP	IV-43	9	Respond to structural fires in situations involving threat to life, property, or national forest resources when local suppression forces are inadequate or nonexistent. Otherwise structural fire suppression is the responsibility of local fire service agencies.
434	FP	IV-43	10	Follow federal, state, and local air quality rules and regulations when burning buildings planned for disposal. Utilize BACT to assure that air quality effects are kept to a low level.
435				**53. Fuel Treatment**
436	FP	IV-44	1	Assist in maintaining the clear, clean air important to the aesthetic enjoyment of the area and the health of the people through the regulation of open burning.
437	FP	IV-44	2	Adhere to Federal, State, regional and local guidelines regarding air quality including the LTBMU Smoke Management Plan.
438	FP	IV-44	3	Employ techniques for managing the generation of smoke including achievement of complete combustion, and proper timing for venting to highest elevation and dispersal from the basin. Fuels will normally not be burned for one summer season after cutting to allow sufficient time for drying.
439	FP	IV-44	4	Use nonburning techniques, such as lopping and scattering, whenever residual fuel loads will be acceptable, especially where the slash will help to protect the soil.
440	FP	IV-44	5	Leave at least two slash piles per acre for wildlife cover.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
441	FP	IV-44	6	Treat activity fuels in the near view of high use travel corridors, recreation sites, and urbanized areas. Cleanup need not be 100%. The debris, after two year of deterioration or utilization for campfires, should not appear dominant in the landscape. Scattering of fuels will be preferable, but unburned piles at a density of five per acre or less would normally be acceptable where a forest canopy remains.
442	FP	IV-44	7	Slash will not normally be buried.
443	FP	IV-44	8	Locate activity fuel burning beyond 50 feet of any stream channel or standing water.
444	SNFPA	49	1	*Strategically place area fuels treatments across the landscape to interrupt fire spread and achieve conditions that: (1) reduce the size and severity of wildfire and (2) result in stand densities necessary for healthy forests during drought conditions. Complete a landscape-level design of area treatment patterns prior to project-level analysis. Develop treatment patterns using a collaborative, multi-stakeholder approach. Determine the size, location, and orientation of area fuels treatments at a landscape-scale, using information about fire history, existing vegetation and fuels condition, prevailing wind direction, topography, suppression resources, attack times, and accessibility to design an effective treatment pattern. The spatial pattern of the treatments is designed to reduce rate of fire spread and fire intensity at the head of the fire.*
445	SNFPA	49	1	*Strategic placement of fuels treatments should also consider objectives for locating treatment areas to overlap with areas of condition class 2 and 3, high density stands, and pockets of insect and disease. Avoid PACs to the greatest extent possible when locating area treatments. Incorporate areas that already contribute to wildfire behavior modification, including timber sales, burned areas, bodies of water, and barren ground, into the landscape treatment area pattern. Identify gaps in the landscape pattern where fire could spread at some undesired rate or direction and use treatments (including maintenance treatments and new fuels treatments) to fill identified gaps.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
446	SNFPA	50	4	*Vegetation within treatment areas should be modified to meet desired surface ladder, and crown fuel conditions as well as stand densities necessary for healthy forests during drought conditions. Site specific prescriptions should be designed to reduce fire intensity, rate of fire spread, crown fire potential, mortality in dominant and co-dominant trees, and tree density. Managers should consider such variables as the topographic location of the treatment area, slope steepness, predominant wind direction, and the amount and arrangement of surface, ladder, and crown fuels in developing fuels treatment prescriptions*
447	SNFPA	49	2	*Design mechanical treatments in brush and shrub patches to remove the material necessary to achieve the following outcomes from wildland fire under 90th percentile fire weather conditions: (1) wildland fires would burn with an average flame length of 4 feet or less and (2) fire line production rates would be doubled. Treatments should be effective for more than 5 to 10 years*
448	SNFPA	50	5	*Design a sequence of fuel reduction treatments in conifer forest types (including 3x plantation types) to achieve the following standards within the treatment area:• an average of 4-foot flame length under 90th percentile fire weather conditions. • surface and ladder fuels removed as needed to meet design criteria of less than 20 percent mortality in dominant and co-dominant trees under 90th percentile weather and fire behavior conditions. •tree crowns thinned to meet design criteria of less than 20 percent probability of initiation of crown fire under 90th percentile weather conditions.*
449	SNFPA	59	71	*Within the assessment area or watershed, locate fuels treatments to minimize impacts to PACs. PACs may be re-mapped during project planning to avoid intersections with treatment areas, provided that the re-mapped PACs contain habitat of equal quality and include known nest sites and important roost sites. Document PAC adjustments in biological evaluations.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
450	SNFPA	60	72	*When treatment areas must intersect PACs and choices can be made about which PACs to enter, use the following criteria to preferentially avoid PACs that have the highest likely contribution to owl productivity.* ***Lowest contribution to productivity****: PACs presently unoccupied and historically occupied by territorial singles only; PACs presently unoccupied and historically occupied by pairs, PACs presently occupied by territorial singles; PACs presently occupied by pairs.* ***Highest contribution to productivity****: PACs currently or historically reproductive. Historical occupancy is considered occupancy since 1990. Current occupancy is based on surveys consistent with survey protocol (March 1992) in the last 2-3 years prior to project planning. These dates were chosen to encompass the majority of survey efforts and to include breeding pulses in the early 1990s when many sites were found to be productive. When designing treatment unit intersections with PACs, limit treatment acres to those necessary to achieve strategic placement objectives and avoid treatments adjacent to nest stands whenever possible.*
451	SNFPA	60	72	*If nesting or foraging habitat in PACs is mechanically treated, mitigate by adding acreage to the PAC, equivalent to the treated acres, using adjacent acres of comparable quality, wherever possible.*
452	SNFPA	60	72	*Mechanical treatments may be conducted to meet fuels objectives in protected activity centers (PACs) located in WUI defense zones. In PACs located in WUI threat zones, mechanical treatments are allowed where prescribed fire is not feasible and where avoiding PACs would significantly compromise the overall effectiveness of the landscape fire and fuels strategy. Mechanical treatments should be designed to maintain habitat structure and function of the PAC.*
453	SNFPA	60	73	*While mechanical treatments may be conducted in protected activity centers (PACs) located in WUI defense zones and, in some cases, threat zones, they are prohibited within a 500-foot radius buffer around a spotted owl activity center within the designated PAC. Prescribed burning is allowed within the 500-foot radius buffer. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat. Treatments in the remainder of the PAC use the forest-wide standards and guidelines for mechanical thinning.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
454	SNFPA	60	74	*In PACs located outside the WUI, limit stand-altering activities to reducing surface and ladder fuels through prescribed fire treatments. In forested stands with overstory trees 11 inches dbh and greater, design prescribed fire treatments to have an average flame length of 4 feet or less. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat.*
455	SNFPA	60	75	*For California spotted owl PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the activity center during the breeding season (March 1 through August 31), unless surveys confirm that California spotted owls are not nesting. Prior to implementing activities within or adjacent to a California spotted owl PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center*
456	SNFPA	60	76	*For northern goshawk PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the nest stand within a protected activity center (PAC) is unknown, either apply the LOP to a ¼- mile area surrounding the PAC, or survey to determine the nest stand location*
457	SNFPA	60	77	*The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be modified.*
458	SNFPA	61	78	*Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of California spotted owl PACs per year on a forest.*
459	SNFPA	61	79	*Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of northern goshawk PACs per year on a forest.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
460	SNFPA	61	80	*For California spotted owl PACs: Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the acres in California spotted owl PACs in the 11 Sierra Nevada national forests. Monitor the number of PACs treated at a bioregional scale.*
461	SNFPA	61	81	*For northern goshawk PACs: Conduct mechanical treatments in no more than 5 percent per year and 10 percent per decade of the acres in northern goshawk PACs in the 11 Sierra Nevada national forests.*
462	SNFPA	60	85	*Protect fisher den site buffers from disturbance with a limited operating period (LOP) from March 1 through June 30 for vegetation treatments as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location.*
463	SNFPA	60	86	*Avoid fuel treatments in fisher den site buffers to the extent possible. If areas within den site buffers must be treated to achieve fuels objectives for the urban wildland intermix zone, limit treatments to mechanical clearing of fuels. Treat ladder and surface fuels to achieve fuels objectives. Use piling or mastication to treat surface fuels during initial treatment. Burning of piled debris is allowed. Prescribed fire may be used to treat fuels if no other reasonable alternative exists.*
464	SNFPA	62	88	*Protect marten den site buffers from disturbance from vegetation treatments with a limited operating period (LOP) from May 1 through July 31 as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location.*
465				**54. Prescribed Fire**
466	FP	IV-44	1	Do not use unplanned ignition prescribed fire.
467	FP	IV-44	2	Adhere to Federal, Regional, State and local guidelines regarding air quality including the LTBMU Smoke Management Plan.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
468	FP	IV-44	3	Employ techniques for managing the generation of smoke including achievement of complete combustion and proper timing for venting to highest elevation and dispersal from the basin.
469	FP	IV-44	4	Design prescribed fire activities to avoid adverse affect on soil and water resources and minimize charring of downed woody material retained for wildlife. Flame height will not exceed two feet within 50 feet of stream courses or on wetlands unless higher intensities are required to achieve specific objectives.
470	SNFPA	64	109	*Within CARs, in occupied habitat or "essential habitat" as identified in conservation assessments for threatened, endangered, or sensitive species, evaluate the appropriate role, timing, and extent of prescribed fire. Avoid direct lighting within riparian vegetation; prescribed fires may back into riparian vegetation areas. Develop mitigation measures to avoid impacts to these species whenever ground-disturbing equipment is used*
471	SNFPA	64	110	*Use screening devices for water drafting pumps. (Fire suppression activities are exempt during initial attack.) Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats*
472	SNFPA	64	111	*Design prescribed fire treatments to minimize disturbance of ground cover and riparian vegetation in RCAs. In burn plans for project areas that include, or are adjacent to RCAs, identify mitigation measures to minimize the spread of fire into riparian vegetation. In determining which mitigation measures to adopt, weigh the potential harm of mitigation measures, for example fire lines, against the risks and benefits of prescribed fire entering riparian vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could be damaging to habitat or long-term function of the riparian community*
473	SNFPA	64	112	*Post-wildfire management activities in RCAs and CARs should emphasize enhancing native vegetation cover, stabilizing channels by non-structural means, minimizing adverse effects from the existing road network, and carrying out activities identified in landscape analyses. Post-wildfire operations shall minimize the exposure of bare soil*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
474	SNFPA	64	113	*Allow hazard tree removal within RCAs or CARs. Allow mechanical ground disturbing fuels treatments, salvage harvest, or commercial fuelwood cutting within RCAs or CARs when the activity is consistent with RCOs. Utilize low ground pressure equipment, helicopters, over the snow logging, or other non-ground disturbing actions to operate off of existing roads when needed to achieve RCOs. Ensure that existing roads, landings, and skid trails meet Best Management Practices. Minimize the construction of new skid trails or roads for access into RCAs for fuel treatments, salvage harvest, commercial fuelwood cutting, or hazard tree removal*
475	SNFPA	65	114	*As appropriate, assess and document aquatic conditions following the Regional Stream Condition Inventory protocol prior to implementing ground disturbing activities within suitable habitat for California red-legged frog, Cascades frog, Yosemite toad, foothill and mountain yellow-legged frogs, and northern leopard frog*
476	SNFPA	65	115	*During fire suppression activities, consider impacts to aquatic- and riparian-dependent resources. Where possible, locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RCAs or CARs. During pre-suppression planning, determine guidelines for suppression activities, including avoidance of potential adverse effects to aquatic-and riparian-dependent species as a goal*
477	SNFPA	65	116	*Identify roads, trails, OHV trails and staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day use sites during landscape analysis. Identify conditions that degrade water quality or habitat for aquatic and riparian-dependent species. At the project level, evaluate and consider actions to ensure consistency with standards and guidelines or desired conditions*
478				**55. Law Enforcement**
479				Review and amend the LTBMU Law Enforcement Action Plan annually through an interdisciplinary process. Forest Supervisors orders issued to provide specific restrictions beyond the general provisions of the Code of Federal Regulations will be reviewed annually.
480				**56. Forest Pest Management**

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
481	FP	IV-45	1	Follow an Integrated Pest Management (IPM) approach during the planning and implementation of resource management activities, particularly those influencing the vegetation. Under this IPM approach, a full range of pest management alternatives, including cultural, biological, mechanical and chemical methods, will be considered and analyzed on a site-specific, project level basis. The treatment method(s) will be selected through the environmental analysis process which will consider the environmental effects, treatment efficacy and cost effectiveness of each alternative. Monitoring and enforcement plans to implement specific measures will be determined during this site and project-specific process. Pest detection, surveillance, evaluation, prevention, suppression, and post-action evaluation are integral components of the integrated pest management approach (36 CFR 219.27 (a) (3)).
482				**57. Geologic Inventory & Evaluation, Geotechnical Investigation**
483	FP	IV-45	1	Identify and give priority to areas that need more detailed geologic hazard information. Complete the Forest Geologic Resource Inventory, including landslide hazards and risk assessment, earthquake and volcanic hazard assessment, snow avalanche hazard assessment, and geologic special interest area inventory and analysis.
484	FP	IV-45	2	Use the Geologic Resource Inventory, when completed, or other available geologic hazard and resource information for preliminary assessment of projects which impact unstable land or snow avalanche areas, disturb the land surface, or develop geologic resources. Provide geologic and geotechnical evaluation of projects with a potential to initiate or accelerate landslide or snow avalanche. Avoid or provide special treatment on unstable areas to avoid triggering mass movement.
485	FP	IV-45	3	Allow no land disturbing activities on highly unstable areas.
486	FP	IV-45	4	Avoid earthquake fault zones whenever possible when designing roads and other facilities.
487	FP	IV-45	5	Develop site-specific mitigation measures where potential slope instability is identified.
488				**58. Riparian and Stream Environment Zone (SEZ) Management**

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
489	SNFPA	62	91	*Designate riparian conservation area (RCA) widths as described in Part B of this appendix. The RCA widths displayed in Part B may be adjusted at the project level if a landscape analysis has been completed and a site-specific RCO analysis demonstrates a need for different widths.*
490	SNFPA	62	92	*Evaluate new proposed management activities within CARs and RCAs during environmental analysis to determine consistency with the riparian conservation objectives at the project level and the AMS goals for the landscape. Ensure that appropriate mitigation measures are enacted to (1) minimize the risk of activity-related sediment entering aquatic systems and (2) minimize impacts to habitat for aquatic- or riparian-dependent plant and animal species.*
491	SNFPA	62	93	*Identify existing uses and activities in CARs and RCAs during landscape analysis. At the time of permit reissuance, evaluate and consider actions needed for consistency with RCOs.*
492	SNFPA	62	94	*As part of project-level analysis, conduct peer reviews for projects that propose ground-disturbing activities in more than 25 percent of the RCA or more than 15 percent of a CAR.*
493	SNFPA	63	95	*For waters designated as "Water Quality Limited" (Clean Water Act Section 303(d)), participate in the development of Total Maximum Daily Loads (TMDLs) and TMDL Implementation Plans. Execute applicable elements of completed TMDL Implementation Plans.*
494	SNFPA	63	96	*Ensure that management activities do not adversely affect water temperatures necessary for local aquatic- and riparian-dependent species assemblages.*
495	SNFPA	63	97	*Limit pesticide applications to cases where project level analysis indicates that pesticide applications are consistent with riparian conservation objectives.*
496	SNFPA	63	99	*Prohibit storage of fuels and other toxic materials within RCAs and CARs except at designated administrative sites and sites covered by a Special Use Authorization. Prohibit refueling within RCAs and CARs unless there are no other alternatives. Ensure that spill plans are reviewed and up-to-date.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
497	SNFPA	63	100	*Maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features by identifying roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths. Implement corrective actions where necessary to restore connectivity.*
498	SNFPA	63	101	*Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species. Locate water drafting sites to avoid adverse effects to in stream flows and depletion of pool habitat. Where possible, maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features.*
499	SNFPA	63	102	*Prior to activities that could adversely affect streams, determine if relevant stream characteristics are within the range of natural variability. If characteristics are outside the range of natural variability, implement mitigation measures and short-term restoration actions needed to prevent further declines or cause an upward trend in conditions. Evaluate required long-term restoration actions and implement them according to their status among other restoration needs.*
500	SNFPA	63	103	*Prevent disturbance to streambanks and natural lake and pond shorelines caused by resource activities (for example, livestock, off-highway vehicles, and dispersed recreation) from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots. This standard does not apply to developed recreation sites, sites authorized under Special Use Permits and designated off-highway vehicle routes.*
501	SNFPA	63	104	*In stream reaches occupied by, or identified as "essential habitat" in the conservation assessment for, the Lahontan and Paiute cutthroat trout and the Little Kern golden trout, limit streambank disturbance from livestock to 10 percent of the occupied or "essential habitat" stream reach. (Conservation assessments are described in the record of decision.) Cooperate with State and Federal agencies to develop streambank disturbance standards for threatened, endangered, and sensitive species. Use the regional streambank assessment protocol. Implement corrective action where disturbance limits have been exceeded.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
502	SNFPA	64	105	*At either the landscape or project-scale, determine if the age class, structural diversity, composition, and cover of riparian vegetation are within the range of natural variability for the vegetative community. If conditions are outside the range of natural variability, consider implementing mitigation and/or restoration actions that will result in an upward trend. Actions could include restoration of aspen or other riparian vegetation where conifer encroachment is identified as a problem.*
503	SNFPA	64	106	*Cooperate with Federal, Tribal, State and local governments to secure in stream flows needed to maintain, recover, and restore riparian resources, channel conditions, and aquatic habitat Maintain in stream flows to protect aquatic systems to which species are uniquely adapted. Minimize the effects of stream diversions or other flow modifications from hydroelectric projects on threatened, endangered, and sensitive species.*
504	SNFPA	64	107	*For exempt hydroelectric facilities on national forest lands, ensure that special use permit language provides adequate in stream flow requirements to maintain, restore, or recover favorable ecological conditions for local riparian- and aquatic-dependent species.*
505	SNFPA	64	109	*Within CARs, in occupied habitat or "essential habitat" as identified in conservation assessments for threatened, endangered, or sensitive species, evaluate the appropriate role, timing, and extent of prescribed fire. Avoid direct lighting within riparian vegetation; prescribed fires may back into riparian vegetation areas. Develop mitigation measures to avoid impacts to these species whenever ground-disturbing equipment is used.*
506	SNFPA	64	110	*Use screening devices for water drafting pumps. (Fire suppression activities are exempt during initial attack.) Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
507	SNFPA	64	111	*Design prescribed fire treatments to minimize disturbance of ground cover and riparian vegetation in RCAs. In burn plans for project areas that include, or are adjacent to RCAs, identify mitigation measures to minimize the spread of fire into riparian vegetation. In determining which mitigation measures to adopt, weigh the potential harm of mitigation measures, for example fire lines, against the risks and benefits of prescribed fire entering riparian vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could be damaging to habitat or long-term function of the riparian community.*
508	SNFPA	64	112	*Post-wildfire management activities in RCAs and CARs should emphasize enhancing native vegetation cover, stabilizing channels by non-structural means, minimizing adverse effects from the existing road network, and carrying out activities identified in landscape analyses. Post-wildfire operations shall minimize the exposure of bare soil.*
509	SNFPA	64	113	*Allow hazard tree removal within RCAs or CARs. Allow mechanical ground disturbing fuels treatments, salvage harvest, or commercial fuelwood cutting within RCAs or CARs when the activity is consistent with RCOs. Utilize low ground pressure equipment, helicopters, over the snow logging, or other non-ground disturbing actions to operate off of existing roads when needed to achieve RCOs. Ensure that existing roads, landings, and skid trails meet Best Management Practices. Minimize the construction of new skid trails or roads for access into RCAs for fuel treatments, salvage harvest, commercial fuelwood cutting, or hazard tree removal.*
510	SNFPA	64	114	*As appropriate, assess and document aquatic conditions following the Regional Stream Condition Inventory protocol prior to implementing ground disturbing activities within suitable habitat for California red-legged frog, Cascades frog, Yosemite toad, foothill and mountain yellow-legged frogs, and northern leopard frog.*
511	SNFPA	65	115	*During fire suppression activities, consider impacts to aquatic- and riparian-dependent resources. Where possible, locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RCAs or CARs. During pre-suppression planning, determine guidelines for suppression activities, including avoidance of potential adverse effects to aquatic-and riparian-dependent species as a goal.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
512	SNFPA	65	116	*Identify roads, trails, OHV trails and staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day use sites during landscape analysis. Identify conditions that degrade water quality or habitat for aquatic and riparian-dependent species. At the project level, evaluate and consider actions to ensure consistency with standards and guidelines or desired conditions.*
513	SNFPA	65	117	*Assess the hydrologic function of meadow habitats and other special aquatic features during range management analysis. Ensure that characteristics of special features are, at a minimum, at Proper Functioning Condition, as defined in the appropriate Technical Reports (or their successor publications): (1) "Process for Assessing PFC" TR 1737-9 (1993), "PFC for Lotic Areas" USDI TR 1737-15 (1998) or (2) "PFC for Lentic Riparian-Wetland Areas" USDI TR 1737-11 (1994).*
514	SNFPA	65	118	*Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining bogs and fens include, but are not limited to, presence of: (1) sphagnum moss (Spagnum spp.), (2) mosses belonging to the genus Meessia, and (3) sundew (Drosera spp.) Complete initial plant inventories of bogs and fens within active grazing allotments prior to re-issuing permits.*
515	SNFPA	65	119	*Locate new facilities for gathering livestock and pack stock outside of meadows and riparian conservation areas. During project-level planning, evaluate and consider relocating existing livestock facilities outside of meadows and riparian areas. Prior to re-issuing grazing permits, assess the compatibility of livestock management facilities located in riparian conservation areas with riparian conservation objectives.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
516	SNFPA	65	120	*Under season-long grazing: For meadows in early seral status: limit livestock utilization of grass and grass-like plants to 30 percent (or minimum 6-inch stubble height). For meadows in late seral status: limit livestock utilization of grass and grass-like plants to a maximum of 40 percent (or minimum 4-inch stubble height). Determine ecological status on all key areas monitored for grazing utilization prior to establishing utilization levels. Use Regional ecological scorecards and range plant list in regional range handbooks to determine ecological status. Analyze meadow ecological status every 3 to 5 years. If meadow ecological status is determined to be moving in a downward trend, modify or suspend grazing. Include ecological status data in a spatially explicit Geographical Information System database. Under intensive grazing systems (such as rest-rotation and deferred rotation) where meadows are receiving a period of rest, utilization levels can be higher than the levels described above if the meadow is maintained in late seral status and meadow-associated species are not being impacted. Degraded meadows (such as those in early seral status with greater than 10 percent of the meadow area in bare soil and active erosion) require total rest from grazing until they have recovered and have moved to mid- or late seral status.*
517	SNFPA	66	121	*Limit browsing to no more than 20 percent of the annual leader growth of mature riparian shrubs and no more than 20 percent of individual seedlings. Remove livestock from any area of an allotment when browsing indicates a change in livestock preference from grazing herbaceous vegetation to browsing woody riparian vegetation.*
518	SNFPA	66	122	*Recommend restoration practices in: (1) areas with compaction in excess of soil quality standards, (2) areas with lowered water tables, or (3) areas that are either actively down cutting or that have historic gullies. Identify other management practices, for example, road building, recreational use, grazing, and timber harvests, that may be contributing to the observed degradation.*
519				**59. Forest-Wide Noxious Weed Management**
520	SNFPA	54	36	*Inform forest users, local agencies, special use permittees, groups, and organizations in communities near national forests about noxious weed prevention and management.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
521	SNFPA	54	37	*Work cooperatively with California and Nevada State agencies and individual counties (for example, Cooperative Weed Management Areas) to: (1) prevent the introduction and establishment of noxious weed infestations and (2) control existing infestations.*
522	SNFPA	55	38	*As part of project planning, conduct a noxious weed risk assessment to determine risks for weed spread (high, moderate, or low) associated with different types of proposed management activities. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy to develop mitigation measures for high and moderate risk activities.*
523	SNFPA	55	39	*When recommended in project-level noxious weed risk assessments, consider requiring off-road equipment and vehicles (both Forest Service and contracted) used for project implementation to be weed free. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy.*
524	SNFPA	55	40	*Minimize weed spread by incorporating weed prevention and control measures into ongoing management or maintenance activities that involve ground disturbance or the possibility of spreading weeds. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy.*
525	SNFPA	55	41	*Conduct follow-up inspections of ground disturbing activities to ensure adherence to the Regional Noxious Weed Management Strategy.*
526	SNFPA	55	42	*Encourage use of certified weed free hay and straw. Cooperate with other agencies and the public in developing a certification program for weed free hay and straw. Phase in the program as certified weed free hay and straw becomes available. This standard and guideline applies to pack and saddle stock used by the public, livestock permittees, outfitter guide permittees, and local, State, and Federal agencies.*
527	SNFPA	55	43	*Include weed prevention measures, as necessary, when amending or re-issuing permits (including, but not limited to, livestock grazing, special uses, and pack stock operator permits.*
528	SNFPA	55	44	*Include weed prevention measures and weed control treatments in mining plans of operation and reclamation plans. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy. Monitor for weeds, as appropriate, for 2 years after project implementation (assuming no weed introductions have occurred).*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
529	SNFPA	55	45	*Conduct a risk analysis for weed spread associated with burned area emergency rehabilitation (BAER) treatments. The BAER team is responsible for conducting this analysis. Monitor and treat weed infestations for 3 years after the fire.*
530	SNFPA	55	46	*Consult with American Indians to determine priority areas for weed prevention and control where traditional gathering areas are threatened by weed infestations.*
531	SNFPA	55	47	*Complete noxious weed inventories, based on regional protocol. Review and update these inventories on an annual basis.*
532	SNFPA	55	48	*As outlined in the Regional Noxious Weed Management Strategy, when new, small weed infestations are detected, emphasize eradication of these infestations while providing for the safety of field personnel.*
533	SNFPA	55	49	*Routinely monitor noxious weed control projects to determine success and to evaluate the need for follow-up treatments or different control methods . Monitor known weed infestations, as appropriate, to determine changes in weed population density and rate of spread.*
534	Blackwood	IV-58		Expand Kaspian campground by 50 PAOT.
535	Blackwood	IV-58		Restrict OHV use in this management area to roads and designated routes. Inform OHV users of the sensitivity of the watershed.
536	Blackwood	IV-58		Keep management area open to over-the-snow vehicle use. Issue no winter motorized outfitter guide permits.
537	Blackwood	IV-58		Protect suitable habitat for goshawk and spotted owl.
538	Blackwood	IV-58		Improve the ability for fish to migrate in this stream past the concrete diversion structure, and improve limited habitat.
539	Blackwood	IV-58		Prohibit livestock grazing for at least the duration of this plan. Continue to allow sheep crossing from the Tahoe NF to a truck loading site in Blackwood in the fall, provided that no watershed damage occurs as a result.
540	Blackwood	IV-58		Intensive timber management activities will not occur during this plan period.
541	Blackwood	IV-58		Allow this practice where necessary to prevent insect and disease outbreaks from escalating into epidemic proportions.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
542	Blackwood	IV-58		The Barker Pass road will be utilized as a major log haul route from the Tahoe National Forest. However, it will not be realigned or upgraded to a standard that could make it a new trans-Sierra highway. Existing OHV roads will be managed to preserve or enhance quality OHV opportunities.
543	Desolation	IV-64		Maintain closure to OHV use and mountain bicycles. Issue no new outfitter guide permits or competitive recreation events permits.
544	Desolation	IV-64		Use the Desolation Wilderness Management Plan except for the fire management portion to specifically guide management activities for the area.
545	Desolation	IV-64		Evaluate major emission sources which might affect the Class I airshed, including sources not on Federal land. Inventory and assess identified air quality related values (AQRV) of visibility, bryoria lichen species and acidity of water.
546	East Shore Beaches	IV-69		Construct a boat-in day use site at Skunk Harbor, with capacity of 25 PAOT.
547	East Shore Beaches	IV-69		Provide parking and associated improvements for 850 PAOT at suitable locations off Highway 28 to eliminate the roadside parking. Plan parking nodes with Nevada Department of Transportation and the Division of Parks and Recreation.
548	East Shore Beaches	IV-69		Designate scenic vista points along Highway 28.
549	East Shore Beaches	IV-69		Assure that not all the parking is used by beach users, but that some is reserved for emergency roadside stops and for scenic viewing.
550	East Shore Beaches	IV-69		Prohibit overnight camping and OHV use. Emphasize management programs to minimize littering along the beaches and trails. Regularly maintain trail improvements to protect fragile soils and vegetation from heavy public use.
551	East Shore Beaches	IV-69		Maintain closure to over-the-snow vehicles north of Skunk Harbor. No permits for winter motorized outfitter guides will be issued.
552	East Shore Beaches	IV-69		Restore the highway foreground view with nodal parking.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
553	East Shore Beaches	IV-69		Evaluate and interpret the Newhall house and outbuilding at Skunk Harbor. Manage as appropriate through recordation, interpretation, and/or preservation. Evaluate significance of Slaughterhouse Canyon railroad grade, and interpret grade if desirable.
554	East Shore Beaches	IV-69		Maintain roads for administrative purposes and allow for access to the private homes at Secret Harbor.
555	East Shore Beaches	IV-69		Install barriers or other devices to prevent roadside parking where it has been determined to be a visual, safety and water quality management problem.
556	Echo Lakes	IV-75		Develop an Echo Summit vista with a capacity of 50 PAOT.
557	Echo Lakes	IV-75		Expansion will not exceed 40 PAOT above the current level for Echo Lake and Echo Summit parking.
558	Echo Lakes	IV-75		Recreation residences, organization camps, and resorts will not be enlarged in capacity or in land coverage.
559	Echo Lakes	IV-75		A single future use determination will be made for all the private sector improvements in this management area since all term permits expire on January 31, 1991, and their continuance substantially determines the character of the area for the future.
560	Echo Lakes	IV-75		Manage the old Camp Harvey West site at the west end of Upper Echo Lake as a dispersed recreation area. Maintain use at a level that allows natural watershed and vegetation rehabilitation to progress.
561	Echo Lakes	IV-75		Maintain the closure to OHV activity. Vehicles may travel on forest development roads.
562	Echo Lakes	IV-75		Maintain the camping closure.
563	Echo Lakes	IV-75		Maintain the closure to over-the-snow vehicles. Owners of private land and recreation residences may travel on the forest development roads when they are snow covered to gain access, but not for recreational purposes. No permits for winter motorized outfitter guides will be issued.
564	Echo Lakes	IV-75		Cooperate with El Dorado County on their ordinance that closes avalanche prone areas along Highway 50 to over-the-snow travel (motorized or nonmotorized).
565	Echo Lakes	IV-75		Maintain the camping closure.
566	Echo Lakes	IV-75		Continue to work with CalTrans to improve the appearance of the maintenance yard on Echo Summit to enhance the highway entry corridor to Lake Tahoe.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
567	Echo Lakes	IV-75		Develop cost sharing arrangements with cabin and resort owners for the road to Echo Lake that was removed from county maintenance in 1984.
568	Echo Lakes	IV-75		No sewer collection line will be constructed to serve the recreation residences around Echo Lake.
569	Emerald Bay	IV-81		Maximum expansion of developed facilities will be limited to 25 PAOT over present at Inspiration Point. At the same time, upgrade the interpretation at the site, reduce environmental impacts and make it safer.
570	Emerald Bay	IV-81		Plan the future use of the Emerald Bay recreation residence tract prior to the expiration of the permits in 1991.
571	Emerald Bay	IV-81		Recreation residences will not be enlarged in capacity or in land coverage.
572	Emerald Bay	IV-81		This area is closed to OHV use.
573	Emerald Bay	IV-81		Overnight camping is permitted only in designated Forest Service and State Park campgrounds. No new outfitter guide permits will be issued.
574	Emerald Bay	IV-81		This area is closed to over-the-snow vehicle use. No new winter outfitter guide permits will be issued.
575	Emerald Bay	IV-81		Continue to explore efficient and effective ways to restore the large landslide area to visual quality objectives.
576	Emerald Bay	IV-81		Cut trees if necessary to maintain or improve the view from Inspiration Point.
577	Emerald Bay	IV-81		Support CalTrans' efforts to explore effective, efficient and visually acceptable ways to stabilize the highway cuts and fills and the landslide area.
578	Emerald Bay	IV-81		Work with the California Department of Parks and Recreation and CalTrans to plan for the mix of uses in this management area.
579	Emerald Bay	IV-81		Evaluate the national forest lands around the bay in this planning period to determine if they warrant classification as a Special Interest Area. These lands will also be studied for potential inclusion into the State Park's National Natural Landmark registry.
580	Emerald Bay	IV-81		Explore opportunities to improve management through land exchanges with the State Parks.
581	Fallen Leaf	IV-87		Increase recreation capacity by the following amounts:
582	Fallen Leaf	IV-87		Camp Richardson Campground 770 PAOT

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
583	Fallen Leaf	IV-87		Fallen Leaf Boat Launch 43 PAOT
584	Fallen Leaf	IV-87		Fallen Leaf Picnic/Vista 72 PAOT
585	Fallen Leaf	IV-87		Expand capacity beyond the present level of use at trailhead parking sites to:
586	Fallen Leaf	IV-87		Angora Ridge Winter 15 PAOT
587	Fallen Leaf	IV-87		Mt Tallac 48 PAOT
588	Fallen Leaf	IV-87		Glen Alpine 50 PAOT
589	Fallen Leaf	IV-87		Consider opportunities for use of public transit, or other alternatives, before constructing or reconstructing parking sites.
590	Fallen Leaf	IV-87		Proposed new development will include: Washoe Cultural Center 118 PAOT
591	Fallen Leaf	IV-87		New organization camp 360 PAOT
592	Fallen Leaf	IV-87		Manage Camp Richardson Resort under the terms of the decision notice dated May 28,1982.
593	Fallen Leaf	IV-87		Plan the future use of the recreation residences prior to the expiration of their permits. The permits at Spring Creek, Alpine Falls, Stanford, and Fallen Leaf Lodge tracts expire in 2001. Those at Lily Lake, Fish Hatchery, Angora Lakes, and part of Fallen Leaf tract expire in 1991.
594	Fallen Leaf	IV-87		Because of the high cost and environmental effects of sewering the remote, fragile area, the unsewered tracts will not be connected to the STPUD system. If sewering should someday be required, and if alternate technological solutions are unacceptable, residences in those affected tracts will be terminated. Enforce the conditions of the existing waiver.
595	Fallen Leaf	IV-87		Electrical service will not be extended to Lot 6 of Fish Hatchery Tract because it is so remote from other development.
596	Fallen Leaf	IV-87		Manage Camp Richardson Corral under terms of the special use permit. Work with the permittee to develop a plan for shared management and maintenance of the trails used by the permittee.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
597	Fallen Leaf	IV-87		Implement the plan for the Tallac Historic Site approved in 1980, to provide for public use and enjoyment, while preserving the historically significant aspects of the estates. Where it doesn't conflict with public access the structures and grounds will be made available for a variety of adaptive uses to help generate restoration and maintenance funds. Valhalla's main house will be used as a community resource, managed by the Tahoe Tallac Association, to accommodate non-profit cultural and educational events, ceremonies, performances, meetings or exhibits appropriate to its scale and harmonious with the ambient atmosphere desired for the complex. Encourage the Tahoe Tallac Association to evaluate the feasibility of converting the boathouse into a small community theater. Begin restoring and refurnishing the Pope main house and kitchen to portray an interpretive example of a 1920's summer resort at Lake Tahoe in such a manner that it may also be used for a variety of adaptive uses. The outbuildings may be used for interpretation, public demonstration and exhibition, storage, office space, bath- rooms, or barracks. The Baldwin/McGonagle Estate main house will contain the Tallac Museum, collections curation, and office and work space for interpretive and museum specialists. The outbuildings will be used for educational, interpretive, historical, residential, facilities maintenance or storage purposes.
598	Fallen Leaf	IV-87		Visitor information and interpretive services in this area will be focused at the Lake Tahoe Visitor Center and will include programs and activities throughout the area. The environmental education program will be expanded to year round.
599	Fallen Leaf	IV-87		Maintain the existing parking at Pope and Baldwin beaches for the duration of this plan. Consider opportunities for use of shuttle service that might lead to a reduction in parking on the barrier beach.
600	Fallen Leaf	IV-87		Vehicle use will be limited to Forest Service system roads, subject to other closures. No OHV routes or trails will be designated in this management area. Camping will be prohibited except in developed campgrounds and designated dispersed campsites.
601	Fallen Leaf	IV-87		This management area is open to over-the-snow vehicles except north of Highway 89; at Angora Lakes; from Fallen Leaf Road east to South Lake Tahoe and north of Tahoe Mountain; and west of Lily Lake. No outfitter guide permits for winter motorized use will be issued.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
602	Fallen Leaf	IV-87		Protect the Washoe Cemetery from damage that could occur as a result of intensive recreation use and other activities.
603	Fallen Leaf	IV-87		Complete National Register Nominations for Glen Alpine Springs Resort, Camp Richardson, and Angora Lookout. Evaluate the significance of Fredericks House, the Old Mill, the prehistoric sites, and the Tallac Resort site. Manage these sites and the three estates in a manner appropriate to their historic significance through recordation, research, interpretation, rest- oration, preservation and/or appropriate levels of maintenance. Work with cooperating associations such as the Tahoe Tallac Association, the Lake Tahoe Historical Society, and the Historic Preservation of Glen Alpine Springs Incorporated to accomplish necessary work on these buildings.
604	Fallen Leaf	IV-87		Assist the Washoe Tribe in reestablishing their ties with the Lake Tahoe area.
605	Fallen Leaf	IV-87		Preserve the Washoe cultural resource values along Taylor Creek, for 1/2 mile south of Highway 89, for potential interpretation.
606	Fallen Leaf	IV-87		Manage the bald eagle winter forage area at Taylor Creek for low human disturbance from mid-October to February. Maintain large dominant trees and snags for perching, especially those near water.
607	Fallen Leaf	IV-87		Evaluate the suitability of the two storied stands near Fallen Leaf Lake for bald eagle nest sites.
608	Fallen Leaf	IV-87		Restrict recreation use in the Pope and Baldwin wildlife sanctuaries during goose nesting season.
609	Fallen Leaf	IV-87		Implement the Pope Marsh Management Prescription, approved on September 17, 1982, which calls for installation of nesting islands or platforms and other devices to enhance water- fowl habitat. Develop similar plans for Taylor Creek and Baldwin marshes.
610	Fallen Leaf	IV-87		Seek modifications in the MOU with the Fallen Leaf Protection Association on regulation of Fallen Leaf Lake outflow if monitoring indicates that proper conditions are not being maintained in Taylor Creek for Kokanee salmon spawning and egg and fry survival and habitat for brown trout.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
611	Fallen Leaf	IV-87		Maintain the fish barrier between Taylor Creek and Fallen Leaf Lake to prevent transmittal to Lake Tahoe of a whirling disease caused by *Myxosoma cerebralis* parasite prevalent in Fallen Leaf Lake.
612	Fallen Leaf	IV-87		Continue management efforts to protect existing and potential habitat of *Rorippa subumbellata* on the lakeshore. Prohibit mechanical raking and cleaning of the beaches on these habitat sites.
613	Fallen Leaf	IV-87		Consider the long term effects on the marsh ecosystem before approving any discharge of water into Pope Marsh from the Tahoe Keys treatment plant.
614	Fallen Leaf	IV-87		The Tallac Historic Site would be designated a Special Interest Area and Taylor Creek Wetlands would be evaluated for future SIA designation in this planning period.
615	Fallen Leaf	IV-87		Enlarge the Baldwin employee mobile home park.
616	Fallen Leaf	IV-87		Manage the reservoir at Fallen Leaf Lake to fulfill four objectives. In descending order, the objectives are: 1) abide by rules set forth in our Memorandum of Understanding with the Fallen Leaf Protection Association, 3/6/72; 2) provide for instream flow in Taylor Creek; 3) provide for flood protection; and 4) provide for other specific water levels desired by the protection association. No objective of lower order will be met until the higher ones are fulfilled.
617	Fallen Leaf	IV-87		Supporting documents are: EA for Low Water Management 5/3/81; Minimum Flow needs for Taylor Creek 6/81; Hydrologic Analysis and Operating Plan for Fallen Leaf Lake 6/81.
618	Freel	IV-97		Proposed expansion is 65 PAOT for Fountain Place Trailhead.
619	Freel	IV-97		OHV activity is allowed on designated system roads and trails. Existing designated roads include the Fountain Place Road, and Hell Hole Jeep Trail. Armstrong Pass Trail (18E09), Tucker Flat Trail (18E02), Hell Hole Trail (18E12), Star Lake Trail (18E01) and the Tahoe Rim Trail will be managed for non-motorized summer recreation. Expansion of summer OHV opportunities will be considered only in the area managed for timber stand maintenance.
620	Freel	IV-97		The area north of Fountain Place road is closed to over-the-snow vehicles. The area south of Fountain Place road, including the trail to Armstrong Pass, is open to over-the-snow vehicles.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
621	Freel	IV-97		Maintain option to introduce Lahontan cutthroat trout into upper reaches of Saxon and Trout Creek.
622	Genoa	IV-102		Provide trailhead parking for approximately 35 PAOT, in the vicinity of Daggett Pass.
623	Genoa	IV-102		Allow OHV activity on designated routes only. Maintain the Genoa Peak Road for high clearance and four wheel drive use only. Add roughness and challenge to the road while protecting water quality.
624	Genoa	IV-102		Allow over-the-snow vehicles throughout the entire area. Issue no new outfitter guide permits for motorized winter use.
625	Genoa	IV-102		Enhance the mule deer habitat with vegetation management.
626	Heavenly Valley	IV-107		Revise the 1966 Heavenly Valley Ski Area Master Development Plan to incorporate the requirements of the revised forest plan and the revised TRPA Regional Plan.
627	Heavenly Valley	IV-107		Allow an aerial tramway or other conveyance from the casino core area to East Peak or to the California base facilities to be considered for skier access to the mountain.
628	Heavenly Valley	IV-107		Maximum enlargement of the ski area will be 5,400 SAOT over the present level inside the basin and 3,600 SAOT outside the basin.
629	Heavenly Valley	IV-107		Use the "Summer Site Operation Plan", 1984 and as annually amended, as a guide for administration of erosion control projects, visual rehabilitation, run improvements, and lift construction or reconstruction.
630	Heavenly Valley	IV-107		Use the "Operation and Avalanche Plan", 1973, as amended, as a guide for administration of winter activities within the ski area.
631	Heavenly Valley	IV-107		Explore opportunities to make the area more accessible for non-motorized dispersed recreation.
632	Heavenly Valley	IV-107		Maintain the OHV closure.
633	Heavenly Valley	IV-107		Maintain the camping closure.
634	Heavenly Valley	IV-107		Maintain the OHV closure.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
635	Heavenly Valley	IV-107		Defer tree removal for visual enhancement until there is substantial groundcover of vegetation on ski trails in the areas planned for visual treatment.
636	Heavenly Valley	IV-107		Use a test section to determine effectiveness of visual restoration techniques before employing on all trails.
637	Heavenly Valley	IV-107		Structures and improvements will be attractive and harmonious with a rural mountain ski development setting as viewed in the foreground.
638	Heavenly Valley	IV-107		Assure that the major mule deer migration corridor is not obstructed.
639	Heavenly Valley	IV-107		Aerial techniques or over-the-snow skidding will be the standard method for yarding.
640	Heavenly Valley	IV-107		Obtain water rights sufficient to irrigate stabilization projects and for snowmaking.
641	Heavenly Valley	IV-107		Continue to treat the sources of soil erosion.
642	Heavenly Valley	IV-107		Emphasize use of native drought-tolerant species in revegetation projects.
643	Heavenly Valley	IV-107		Assure that use of fertilizer, snow augmentation chemicals and irrigation water is not excessive.
644	Heavenly Valley	IV-107		Activities designed to enhance the quality of skiing, such as run widening and terrain modification, will proceed in concert with stabilization of disturbed areas.
645	Lower Truckee River	IV-113		Coordinate the development of recreational facilities and uses on the 64 Acres with local governments and citizen groups and with the State Parks, CalTrans, and TRPA. Development of the 64 Acres will accommodate no more than 245 PAOT of new public recreation use.
646	Lower Truckee River	IV-113		Recreation residences will not be allowed to enlarge in capacity or in land coverage.
647	Lower Truckee River	IV-113		No overnight camping in this management area. No permits for winter outfitter guides will be issued.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
648	Lower Truckee River	IV-113		Use the EIS prepared for the 64 Acre tract by the Bureau of Reclamation and the Forest Service EA "A Plan for the Sixty-four Acre Tract" (Nov. 1986) as a guide for site development on the tract.
649	Lower Truckee River	IV-113		Allow the "chimney" portion of the 64 Acres tract north of the river to be utilized for public services.
650	Lower Truckee River	IV-113		Title to national forest and private lands along the river had been clouded by the "Lanfar Deed", which claimed for Sierra Pacific Power Company (SPP) title to lands within 100 feet of the river. In a suit and appeal filed by Sierra Pacific (May & June 1985) the courts found that SPP Company's rights consist of no more than an easement for water and power purposes.
651	Marlette	IV-118		Proposed expansion is 200 PAOT in the vicinity of Spooner Lake. Present plans call for campgrounds, visitor center, trailhead and snow play area.
652	Marlette	IV-118		Direct overnight camping to areas outside the Marlette Lake watershed.
653	Marlette	IV-118		Maintain the OHV closure. Vehicles may travel on forest development roads west of Highways 50 and 28.
654	Marlette	IV-118		Provide parking for winter access at Spooner Summit including a snowmobile staging area.
655	Marlette	IV-118		The management area is closed to over-the-snow vehicles except the Slaughterhouse Canyon area. No new outfitter guide permits will be issued.
656	Marlette	IV-118		Continue to improve the visual appearance of the Spooner Summit Fire Station.
657	Marlette	IV-118		In cooperation with the Nevada State Parks, evaluate the significance of the historic Slaughterhouse Canyon and associated railroad grade, and provide interpretation of the grade.
658	Marlette	IV-118		Assure that activities occurring within the Marlette Lake watershed are not detrimental to the domestic water supply of Carson City.
659	Marlette	IV-118		Seek withdrawal of the Marlette Lake watershed from mineral prospecting and development.
660	Marlette	IV-118		Work with the State of Nevada toward public ownership of the entire Marlette Lake watershed to protect the domestic water supply.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
661	Marlette	IV-118		Cooperatively plan and implement land exchanges with the Nevada State Park System to improve each agency's ability to serve the public.
662	Marlette	IV-118		Cooperate with the State of Nevada in the maintenance of a forest road system adequate for administrative purposes. Keep vehicular travel, such as to Snow Valley Peak electronic site (Toiyabe National Forest), at a low level so as not to detract from the nonmotorized recreation experience.
663	Marlette	IV-118		Reconstruct the abandoned road from Highway 28 to Marlette Lake Dam as a nonmotorized hiking and riding trail.
664	Marlette	IV-118		Develop a historic/recreation trail from Highway 28 into Slaughterhouse Canyon.
665	Marlette	IV-118		Either construct a new fire station at Spooner Summit administrative site or move to co-locate with the Tahoe-Douglas Fire District Station nearby if the opportunity is provided.
666	Martis	IV-125		Recreation capacity is proposed to increase by 750 PAOT. Precise location and nature of facilities will be determined in project level planning. Potential sites will be managed to preserve options for future development.
667	Martis	IV-125		The Kings Beach OHV area should be managed as described in that Environmental Assessment Report. The Kings Beach OHV area will be limited to 75 PAOT, and Brockway Summit Trailhead parking will be limited to 90 PAOT.
668	Martis	IV-125		The Rim Trail and associated staging area, feeder trails, and trailheads will be given full consideration in planning this area but should not overly constrain other activities such as wildlife habitat improvement, watershed restoration or timber harvest.
669	Martis	IV-125		A system of summer OHV routes will be designated to provide high quality opportunities away from residential areas where resource concerns can be mitigated. Most routes will be designated on existing roads, however short segments may be constructed to complete loops and avoid highly sensitive areas.
670	Martis	IV-125		The area is open to over-the-snow vehicles. Issue no new outfitter guides for winter motorized use.
671	McKinney	IV-130		Maximum capacity for facilities on national forest land will not exceed 650 PAOT.
672	McKinney	IV-130		Approval of new skiing improvements will be through a master development plan.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
673	McKinney	IV-130		Recognize the national significance of the McKinney-Rubicon Road in making decisions for the road standard. OHV use will be limited to system roads. Develop an OHV staging area for the McKinney-Rubicon Road.
674	McKinney	IV-130		Maintain area open to over-the-snow vehicles. Issue no motorized outfitter guide permits.
675	McKinney	IV-130		Upgrade McKinney Creek to excellent condition for migratory fish habitat.
676	McKinney	IV-130		Coordinate with the Tahoe National Forest in administration of the Miller Lake Allotment to assure BMP and compliance with water quality standards.
677	McKinney	IV-130		Follow up as necessary until the revegetation is established to ensure that road closures are maintained.
678	Meeks	IV-134		Design and construct trailhead parking for the Meeks Creek trail into Desolation. Parking should be off of the highway to improve the scenic corridor.
679	Meeks	IV-134		Maintain closure to OHV use.
680	Meeks	IV-134		Maintain closure to over-the-snow vehicles.
681	Meeks	IV-134		Evaluate the historical significance of the older structures at Meeks Bay Resort and the cabins across Highway 89 from the resort, and manage them appropriately.
682	Meeks	IV-134		Evaluate potential for managing a portion of the area for bald eagle nesting.
683	Meeks	IV-134		Create openings throughout the Meeks Creek meadow to improve waterfowl and other riparian habitat needs.
684	Meeks	IV-134		Remove barriers to fish migration along Meeks Creek.
685	Meeks	IV-134		Construct water impoundments in Meeks Creek meadow to enhance waterfowl nesting and foraging.
686	Meeks	IV-134		Install a structure in Meeks Creek below the highway bridge to aid fish migration.
687	Meeks	IV-134		Use this practice to create wildlife openings and to utilize the timber in Meeks Creek meadow.
688	Meeks	IV-134		Obtain the necessary water rights to water impoundments for waterfowl habitat.
689	Meeks	IV-134		Install water quality improvement measures at the resort and on roads.
690	Meeks	IV-134		Maintain the road closure to Lost Lake.
691	Meeks	IV-134		Obtain an unrestricted administrative right-of-way along the south side of Meeks Creek meadow for resource management.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
692	Meeks	IV-134		Work with the California State Parks and Recreation Department to achieve improved management through land adjustments.
693	Meiss	IV-140		Establish capacities for use in areas that attract visitation beyond the physical capability of the land or the ability of the land to produce a quality experience.
694	Meiss	IV-140		Closed to all vehicles.
695	Meiss	IV-140		Closed to all vehicles. Issue no new winter outfitter guide permits.
696	Meiss	IV-140		Provide for management and protection of the historic Meiss Meadow cabin and barn while still allowing its use by the range permittee and outfitter guide.
697	Meiss	IV-140		Protect or improve wildlife habitat in meadow areas.
698	Meiss	IV-140		Assist the California Department of Fish and Game in the reintroduction of the Lahontan cutthroat trout.
699	Meiss	IV-140		Improve fish habitat in meadow areas.
700	Meiss	IV-140		Limit timber management activities to prevention of catastrophic losses in the forest.
701	Mt. Rose	IV-144		Provide parking for dispersed recreation facilities in the vicinity of Tahoe Meadow, not to exceed 100 PAOT.
702	Mt. Rose	IV-144		Open to OHV activities on system roads only.
703	Mt. Rose	IV-144		Open to over-the-snow vehicles except within designated wilderness. Issue no permits for winter motorized outfitter guides.
704	Mt. Rose	IV-144		Assure that dispersed recreation use does not reach a level damaging to sensitive plants in high elevation areas.
705	Roundhill	IV-149		Expansion of the Nevada Beach recreation area will be limited to an additional 500 PAOT. Expansion of Zephyr Cove Resort will be limited to an additional 560 PAOT. Amount of expansion for Round Hill Pines Resort is to be determined in a master development plan. Development at the Zephyr Cove North site near Skyland is proposed at 130 PAOT.
706	Roundhill	IV-149		Require the permittee to reconstruct, maintain, and operate the Zephyr Cove Resort in accordance with the direction in the future use determination, January 1987.
707	Roundhill	IV-149		Allow the Zephyr Cove Resort permittee to prepare and submit a master plan for expansion of the resort within the standards of this and the TRPA Regional Plan.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
708	Roundhill	IV-149		Work with the Zephyr Cove Resort permittee to develop a plan for shared management and maintenance of trails used as part of the stable operation.
709	Roundhill	IV-149		Maintain closure to OHV activity. Maintain closure to overnight camping outside the developed sites.
710	Roundhill	IV-149		Snowmobile activities are allowed except in Rabe Meadow and the vicinity of Round Hill Pines Resort. Issue no outfitter guide permits for motorized winter use.
711	Roundhill	IV-149		Evaluate the historical significance of the Round Hill Pines Resort. Nominate Zephyr Lookout to the National Register of Historic Places, and preserve, maintain, and interpret its historical values.
712	Roundhill	IV-149		As part of the water use evaluation and resolution, consider reducing instream diversions to increase stream flows for fish. Obtain domestic water supply from the lake instead.
713	Roundhill	IV-149		Reintroduce *Rorippa subumbellata* populations to historic sites such as at Nevada Beach and Zephyr Cove.
714	Roundhill	IV-149		Utilize TRPA Instream Flow Study data to set flow levels for one study stream within this area. File for appropriate water rights.
715	Roundhill	IV-149		Study the feasibility of interconnecting public recreation sites with trails.
716	Tahoe Valley	IV-158		Recreation expansion is proposed to add an additional 545 PAOT in developed facilities. Develop project level plans to determine the precise nature, location and size of facilities at the Saxon Creek site. Work closely with other agencies in providing appropriate information programs and facilities for travelers entering the Tahoe Basin on Highway 50.
717	Tahoe Valley	IV-158		Construct parking and other facilities to accommodate 315 PAOT (46 PAOT of which are an expansion over present use outside of an improved facility).
718	Tahoe Valley	IV-158		Based upon the analysis conducted by the Forest Service, as documented in the Environmental Assessment for the proposed Rainbow Tract land exchange, August 31, 1979, the subject area will remain in public ownership and will continue to be managed by the Forest Service. Permits will authorize continued recreation use through 1999. The new permits will be subject to modifications or mitigating measures that may be required to protect the environment or to conform to then current Forest Service policies.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
719	Tahoe Valley	IV-158		Conduct a future use determination (FUD) for Bridge Recreation Residence Tract before the permits terminate in 1991, and for Upper Truckee Tract before the permits terminate in 1989.
720	Tahoe Valley	IV-158		Recreation residences will not be allowed to enlarge in capacity or land coverage.
721	Tahoe Valley	IV-158		OHVs are permitted on designated roads and trails only. Routes will not be designated where conflicts between existing residential areas and users may be exacerbated. Resource monitoring and law enforcement programs will be expanded. OHV trails will be accessed from designated system roads and trailheads only; random access from residential streets will be discouraged. Maintain closures of Christmas Valley, Harootunian tract, and Al Tahoe to Ski Run areas to summer OHV use.
722	Tahoe Valley	IV-158		Camping permitted in developed campgrounds and designated dispersed sites only.
723	Tahoe Valley	IV-158		The area is open to over-the-snow vehicles except for Grass Lake, the north slopes of Waterhouse Peak, the western side of Christmas Valley, and in the vicinity of Pioneer Trail and Black Bart.
724	Tahoe Valley	IV-158		Continue to allow cross country skiing on Grass Lake Moss Bog when the area is designated as a Research Natural Area as long as the bog is not suffering adversely from this activity.
725	Tahoe Valley	IV-158		Cooperate with El Dorado County and the local community in Meyers on the preparation and implementation of the Highway 50 corridor scenic restoration plan.
726	Tahoe Valley	IV-158		Interpret the historic Hawley Grade Trail. Evaluate the historical significance of the Upper Truckee Ranger Station, and protect and interpret its historic values.
727	Tahoe Valley	IV-158		Improve conditions on the Upper Truckee River for migratory and resident trout.
728	Tahoe Valley	IV-158		Waterfowl nesting islands and tubs at Pope Marsh will be maintained. Tubs will be replaced by nesting islands in cooperation with the California Department of Fish and Game.
729	Tahoe Valley	IV-158		Maintain the Upper Truckee Ranger Station pasture and the Cookhouse Meadow pasture primarily for Forest Service administrative use. Develop and implement plans to rehabilitate both pastures to improve forage and watershed condition.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
730	Tahoe Valley	IV-158		Assist the Regional Research Natural Area committee in preparing a specific plan for management of Grass Lake Moss Bog when the area is included in the Research Natural Area System by the Chief. In the meantime, manage the area as if it were an RNA.
731	Tahoe Valley	IV-158		Evaluate Osgood Bog in this planning period for potential Special Interest Area designation.
732	Urban Lots	IV-164		Closed to OHV activities. Vehicles may travel on system roads designated open.
733	Urban Lots	IV-164		Closed to overnight camping.
734	Urban Lots	IV-164		Closed to over-the-snow vehicle activity.
735	Urban Lots	IV-164		Closed to overnight camping.
736	Urban Lots	IV-164		Limit tree cutting to those posing an identified threat to life or property, or to those that threaten the health of the adjoining forest until a management plan is prepared for the community forest.
737	Urban Lots	IV-164		Where case-by-case analysis identifies a parcel to be transferred to local or State government, other nearby parcels should also be transferred as a package.
738	Ward	IV-169		Development of new recreation facilities is projected at 280 PAOT over present level.
739	Ward	IV-169		Expansion of winter parking at Page Meadows will be 14 PAOT over present level.
740	Ward	IV-169		A vista point and trailhead parking for access along Stanford Rock ridge will be provided in the SE 1/4 of Section 23, and will be served by the road 15N47.
741	Ward	IV-169		Approve new skiing improvements for the Alpine Meadows/Deer Park expansion into this area through a master development plan meeting Forest Service and TRPA standards. Maximum capacity for new facilities on national forest land at the site will be 5,000 PAOT. Base facilities will be limited to warming huts, food service, first aid, and equipment storage. Construction of new lodges, public parking lots, or ticket sales offices will not be allowed within the basin.
742	Ward	IV-169		OHV use is allowed only on designated system roads. All trails are closed to motorized use.
743	Ward	IV-169		Until ski area expansion occurs, Stanford Ridge will be managed for semi-primitive nonmotorized forms of recreation.
744	Ward	IV-169		Allow over-the-snow vehicles except in Page Meadow.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
745	Ward	IV-169		Remove barriers to migratory fish in Ward Creek.
746	Ward	IV-169		Road 15N47 to Stanford Rock will remain closed until an adequate stream crossing is constructed over Ward Creek. Upon completion of the stream crossing and improvement of the road, public access will be allowed to a vista point and trailhead parking near the 1/4 corner for Sections 23 and 24. From this point to Stanford Rock the road will be for administrative use only.
747	Watson	IV-175		Development is projected at 425 PAOT at Cedar Flat and at 750 PAOT at Kings Beach.
748	Watson	IV-175		10 PAOT expansion at Watson Lake undeveloped campground is planned.
749	Watson	IV-175		Expansion of Northstar ski area is limited to 1,000 PAOT.
750	Watson	IV-175		This management area is open to overnight camping; however, some areas may be closed following project level planning. Demand for OHV use will be provided on existing roads and trails. No new OHV trails will be constructed.
751	Watson	IV-175		The area is open to over-the-snow vehicles. Coordinate public and outfitter guide dispersed winter sports opportunities to prevent conflict between motorized and nonmotorized activities.

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Appendix K: Previous Decisions That Remain in Place

The following existing Plan direction remains in place. Subsequent projects and activities must be consistent with the direction listed here.

1. Eight East-Side Rivers Wild and Scenic River Study Report, Record of Decision and FEIS. Published Feb. 1999. USDA Forest Service, Tahoe NF and LTBMU.

2. Desolation Wilderness Management Guidelines, Final Environmental Impact Statement and Record of Decision. Published Nov. 1998, USDA Forest Service, Eldorado NF and LTBMU.

3. Cave Rock Management Direction Record of Decision and FEIS. Published Aug. 2003, USDA Forest Service, LTBMU.

4. Tallac Historic Site Master Plan, FEIS and Record of Decision. Published July 14, 1994, USDA Forest Service, LTBMU.

5. Existing designated communication sites, 1988 Forest Plan, as amended, and are depicted in Map 11. Existing communication sites are as follows:
   a. East Peak
   b. Angels Roost
   c. Ward Peak
   d. Spooner Summit
   e. Brockway Summit
   f. Zephyr Heights Lookout
   g. Meeks water tank
   h. Tahoe Mountain
   i. Angora Lookout

6. Land Acquisition Plan for the Lake Tahoe Basin Final EIS, January 1982,as amended

7. Sierra Nevada Forests Management Indicator Species Amendment FEIS and Record of Decision. Published December 2007. U.S. Forest Service, Pacific Southwest Region. R5-MB-159.

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Appendix L: References Cited

The material listed throughout this section refers to documents and other sources of information that may be obtained from the government entities who published it (see location codes listed in table below), online (when listed), at the public libraries in the Lake Tahoe area (South Lake Tahoe, CA; Zephyr Cove and Carson City, NV) or by writing directly to the publisher.

Table L 1. Specific common locations of materials published by government entities

Location Codes:	Information may be obtained at:
LTBMU -	U.S. Forest Service, Lake Tahoe Basin Management Unit office. 35 College Drive, South Lake Tahoe, CA 96150. http://www.fs.usda.gov/ltbmu
Region 5 (R5) -	U.S. Forest Service, Pacific Southwest Regional Office (National Forests in California), 1323 Club Drive, Vallejo, CA 94592. http://www.fs.fed.us/r5/
PSW -	U.S. Forest Service, Pacific Southwest Research Station, 800 Buchanan Street, West Annex Building, Albany, CA 94710-0011. http://www.fs.fed.us/psw/
FSM & FSH -	U.S. Forest Service Manuals (FSM) and Forest Service Handbooks (FSH) - Office of the Chief of the Forest Service, 1400 Independence Ave., SW Washington, D.C. 20250-0003. http://www.fs.fed.us/im/directives/
SWRCB -	State of California Water Resources Control Board office, 1001 I Street, Sacramento, CA 95814 http://www.waterboards.ca.gov/
TRPA -	Tahoe Regional Planning Agency office, 128 Market Street, PO Box 5310, Stateline, NV 89449. http://www.trpa.org/

Publishers of professional journal articles (e.g., *Society of American Foresters, Journal of Wildlife Management*) offer article abstracts and topic summaries from third-party online database services (and may require organizational subscriptions or purchase of individual articles). These databases of available journal articles are commonly called “science citation” and “social science citation” indexes. Two popular online sources to access professional journal articles are:

- JSTOR (Journal Storage) database - http://www.jstor.org/
- Thomson-Reuters Web of Science - http://ip-science.thomsonreuters.com/mjl/

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Appendix M: Glossary of Acronyms and Terms

Abbreviations and Acronyms

ac.	acres
C	Celsius (centigrade)
CARB	California Air Resources Board
cm	Centimeter
cu	Cubic
dv	Deciview
e.g.	exempli gratia [for example]
Ed(s)	Editor(s)
Et al	et alii [and others]
F	Farenheit
FS	Forest Service
gen.	general
govt.	government
i.e.	id est [that is]
in.	inch(es)

ac.	acres
lb.	pound (libra)
kg	kilogram(s)
km	kilometer(s)
LWRQCB	Regional Water Quality Control Board, Lahontan Region
m	meters
mi.	miles
mm	millimeters
pub.	published
rev.	revised
RSL	Remote Sensing Laboratory
S&PF-FHP	State and Private Forestry, Forest Health Protection
sq.	square
TRPA	Tahoe Regional Planning Agency
unk.	unknown
USDA	United States Department of Agriculture
yd.	yard

Definition of Selected Acronyms

BMP Best Management Practice:

1) Forest Service definition: Procedures, methods, and controls that protect, restore, or mitigate water quality impacts from activities on NFS lands. BMPs provide the basis of the Forest Service water quality management program.
2) TRPA (Code of Ordinances) definition: Alternative structural and nonstructural practices proven effective in erosion control and management of surface runoff in Lake Tahoe Region.

The term BMP is used in various ways in the Lake Tahoe Basin, primarily in relation to water quality and erosion control. A BMP may be an accepted practice, such as installing drainage structures on a road to control runoff, or the term may refer to the structure itself. Locally, BMP may also describe an action – to BMP a site means to implement practices and structures that are considered BMPs.

CWD **Coarse woody debris**: Material usually 12 inches or larger in diameter within stream channels or floodplains. Provides fish habitat and floodplain roughness.

CWHR **California Wildlife Habitats Relationships computer program:** Functions as a predictive model of habitat suitability for wildlife species, describing vegetation conditions through metrics such as tree size classes and canopy closure.

EIP **Environmental Improvement Program:** An interagency partnership among the public land management entities of the Lake Tahoe Basin, to manage projects needed to stem the degradation of Lake Tahoe, funded by Federal, California, Nevada, and local jurisdictions.

EIS **Environmental Impact Statement**: A NEPA compliance document used to evaluate a range of alternatives when solving the problem would have a significant effect on the human environment. The EIS is more than a document, it is a formal analysis process which mandates public comment periods. An EIS covers purpose and need, alternatives, existing conditions, environmental consequences, and consultation and coordination.

FMP **Fire Management Plan:** A plan, which identifies and integrates all wildland fire management and related activities within the context of approved land/resource management plans.

FMU **Fire Management Unit:** May be any land management area definable by objectives, management constraints, topographic features, access, values to be protected, political boundaries, fuel types, major fire regime groups, and so on, that set it apart from the management characteristics of an adjacent FMU. The FMUs may have dominant management objectives and pre-selected strategies assigned to accomplish these objectives.

Definition of Selected Acronyms

HUC **Hydrologic unit code**: Designation by the United States Geologic Survey (USGS) that labels watersheds based on their relative size (from 1, being major river systems, to 12 (being very small subwatersheds of only a few acres).

LEED ™ **Leadership in Energy and Environmental Design:** National standard rating system for what constitutes a "green building." Through the Green Building Council's use as a design guideline and third-party certification tool, it aims to improve occupant well-being, environmental performance and economic returns of buildings.

LOP **Limited operating period:** A restriction placed on a management action within a specific defined area, as to when during the year an event can take place; a management strategy to reduce disturbance to wildlife species and habitats.

LTRA **Lake Tahoe Restoration Act:** Public Law 106-506, Nov. 13, 2000 (at time of publication, the renewal bill has been introduced in Congress as "S. 432: Lake Tahoe Restoration Act of 2011"), States that the Lake Tahoe Basin Management Unit shall be administered by the Secretary of Agriculture, acting through the Chief of the Forest Service, in accordance with this Act and the laws applicable to the National Forest System, in cooperation with the Tahoe Regional Planning Agency.

LTRA Provisions include:

3) Developing an environment restoration priority list for the Lake Tahoe Basin. Sets forth project areas, including: (1) erosion and sediment control; (2) acquisition of environmentally sensitive land; (3) fire risk reduction; (4) cleaning up methyl tertiary butyl ether contamination; and (5) parking and traffic management

4) Authorizing appropriations for priority projects.

Coordinating fire risk reduction activities with State and local agencies, including local fire departments and volunteer groups.

ML **Maintenance level**: Roads are classified into maintenance levels 1-5 depending on the use of the road. Level 1 roads are project roads generally closed to public access, while level 5 roads are paved two-land roads accessible by passenger cars for public use.

MOU **Memorandum of understanding:** A document describing a bilateral or multilateral agreement between parties, to include management actions carried out by the Forest Service, Tribal governments, U.S. government agencies at all levels, and private business entities.

Definition of Selected Acronyms

MVUM **Motor Vehicle Use Map:** A single-purpose, black-and-white paper map that displays those roads, trails, and areas designated for motor vehicle use. Routes not designated for motor vehicle use (such as non-motorized trails, single-purpose roads and trails, unauthorized roads and trails, and temporary roads and trails) will not be shown on a Motor Vehicle Use Map. Motor vehicle use is allowed only on designated roads and trails and in designated areas. The Motor Vehicle Use Map does not replace visitor maps, travel maps, or other maps intended to convey visitor information.

NEPA **National Environmental Policy Act:** Law that requires federal agencies to disclose major actions and their environmental consequences to the public.

NFS **National Forest System:** Federally owned reserves of 191 million acres (77.4 million hectares), administered by the Forest Service of the U.S. Dept. of Agriculture. The system is made up of 155 national forests and 19 national grasslands in 41 states and Puerto Rico (USDA et al 1984).

NVUM **National Visitor Use Monitoring:** U.S. Forest Service national monitoring and reporting system that provides estimates of the volume of recreation visitation to National Forests and Grasslands, and includes descriptive information about that visitation, including activity participation, demographics, visit duration, measures of satisfaction, and trip spending connected to the visit.

OHV **Off-Highway Vehicle (OHV):** Any motor vehicle designed for or capable of crosscountry travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR 212.1).

OSVUM **Over Snow Vehicle Use Map:** A single-purpose, paper map that displays those areas which contain roads, trails designated for over snow vehicle (e.g. snowmobile) use. The map identifies restrictions or prohibitions on over-snow vehicle use within defined geographic areas Over-snow vehicle use other than in accordance with the restrictions or prohibitions of the OSVUM is prohibited (36 CFR 261.14).

PAC **Protected activity center**: Approximately 300 acre area designated as centered on a nest tree to be managed as nesting habitat for CA spotted owls.

RAWS **Remote Automated Weather Stations:** A network of stand-alone dispersed stations on Forest Service and BLM managed lands that monitor the weather and provide weather data assists land management agencies with a variety of projects such as monitoring air quality, rating fire danger, and providing information for research applications. RAWS stations are powered by battery, solar energy, or generator, and broadcast atmospheric and system data at regular intervals.

RCA **Riparian conservation area**: A buffer for streams, special aquatic features and other hydrological depressions as defined by the Sierra Nevada Forest Plan Amendment (SNFPA)

Definition of Selected Acronyms

ROD **Record of decision**: A concise public record of decision is required by the Forest Service at the time the responsible official makes a formal environmental impact statement (EIS) decision, (§1506.10). The record, which may be integrated into any other record prepared by the Forest Service, will include:

(a) The decision made; (b) Identification of all alternatives considered by the Forest Service in reaching the decision, specifying the alternatives which were considered to be environmentally preferable (which may include factors for economic and technical considerations that were balanced in the decision making, stating how those considerations entered into the decision); and (c) Stating whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not. A monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation.

RNWMS **Regional Noxious Weed Management Strategy:** Management strategy for the U.S. Forest Service in California, developed to address this threat, and to work cooperatively with partners check the spread of weeds statewide. Published in August 2000. Reference: http://www.fs.fed.us/r5/noxiousweeds/

SEZ **Stream environment zone**: Biological communities, as defined by TRPA and the Lahontan Water Board, that owe their characteristics to the presence of surface water or a seasonally high groundwater table. The criterion for defining SEZs includes indicators of vegetation, hydrology, and/or soil type (State of CA WQCP 2005).

SIA **Special Interest Areas:** Geographically defined federally protected management area consisting of archaeological, botanical, geological, historical, scenic, paleontological and zoological or other special characteristics or unique values.; recreation or cultural significance; or historic importance.

SNFPA **Sierra Nevada Forest Plan Amendment**: Amendment to the Forest Plans of 11 national forests in the Sierra Nevada mountain range, including the LTBMU. Published in January, 2004 by the Pacific Southwest Region (National Forests in California), Vallejo, CA. Also known as the Sierra Nevada Framework. Reference: http://www.fs.fed.us/r5/snfpa/final-seis/index.html

SNYLF **Sierra Nevada (mountain) yellow-legged frog *(Rana sierra):*** a candidate species for listing under the Endangered Species Act (ESA), and as Sensitive on the Region 5 Regional Forester's Sensitive Species List. See the Aquatic Wildlife section in Chapter 3.

SPLAT **Strategically placed area treatment**: Fuel reduction treatments placed in a pattern to interrupt fire progression such that the fire reduces in intensity and becomes a surface fire in these areas. The overall pattern impedes fire spread.

Definition of Selected Acronyms

TOC **Threshold of Concern**: Watersheds have a natural sensitivity, or threshold, to absorb disturbance, human or natural, specific to geology, soil, and slope.

WUI **Wildland urban interface (intermix)**: An area where human habitation is mixed with areas of flammable wildland vegetation. It extends out from the edge of developed private land into Federal, private, and State jurisdictions.

Glossary of Terms

Access

A function of the transportation system on Forest Service lands managed by the LTBMU to provide for safe travel that reflects appropriate access, considers needs of adjacent landowners, and meets public demand. This occurs through the management of Recreation and Engineering resources, to include: dispersed/developed parking and trailhead facilities, snow removal, and proper signage.

Aggradation

Aggradation involves the raising of the streambed elevation, an increase in width/depth ratio, and a corresponding decrease in channel capacity. Over-bank flows occur more frequently with less-than-high-water events. Excess sediment deposition in the channel and on floodplains is characteristic of the aggrading river. Often, the cause of aggradation is an increase in upstream sediment load and/or size of sediment exceeding the transport capacity of the channel. (US EPA: http://water.epa.gov/scitech/datait/tools/warsss/sedsource_index.cfm).

Alternatives

Alternatives to the proposed action have been Identified and explored. Comments received have been considered in preparation of the draft environmental impact statement. The listed range of alternatives are considered after public comments have been received and analyzed. One of those considered will be a "No Action"alternative.
(36 CFR 219.12(f))

Aquatic Ecosystem

An ecosystem in a body of water. Communities of organisms that are dependent on each other and on their environment live in aquatic ecosystems. Aquatic ecosystems are categorized in freshwater ecosystem types (e.g. Lake Tahoe) as well as marine ecosystem types.

There are three basic types of freshwater ecosystems:

5) Lentic: slow-moving water, including pools, ponds, and lakes.
6) Lotic: rapidly-moving water, for example streams and rivers.
7) Wetlands: areas where the soil is saturated or inundated for at least part of the time.

Basal area

The cross-sectional area of a single stem, including the bark, measured at breat height (4.5 feet above the ground). Also, the cross-sectional area of all stems of a species or all stems in a stand measured at breast height and expressed per unit of land area. (Helms 1998)

Backing fire

A fire spreading, or ignited to spread, into (against) the wind, in the absence of wind, or downslope.

Bog

A wet, poorly drained, highly acid, nutrient poor, peat-accumulating wetland with surface vegetation of acidophilic mosses (particularly Sphagnum) and possibly some shrubs or trees.

Glossary of Terms

Climate Climates – and climate change – are mentioned explicitly in the management principles chapter of the [agency's FY 2007–2012] strategic plan. Strategic goals would directly or indirectly contribute toward enhancing the resilience of forest and grassland resources to the impacts of climate change. (USDA Forest Service Strategic Plan, FY 2007–2012 Climate Change Companion Document, Oct. 14, 2008).

Collaboration A structured manner in which a collection of people with diverse interests share knowledge, ideas, and resources while working together in an inclusive and cooperative manner toward a common purpose. Collaboration, in the context of this part, falls within the full spectrum of public engagement described in the Council on Environmental Quality's publication: Collaboration in NEPA—A Handbook for NEPA Practitioners. The Forest Service retains decisionmaking authority and responsibility for all decisions throughout the process.

Composition The proportion of each tree species in a [forest] stand expressed as a percentage of the total number, basal area, or volume of all tree species in the stand. *(Helms 1998)*

Connectivity Pertaining to the extent to which conditions exist or should be provided between separate national forest or grassland areas to ensure habitat for breeding, feeding, or movement of wildlife and fish within their home range or migration areas.

Deciview An index of atmospheric haziness based on the logarithm of the light extinction coefficient. A given change in deciviews is assumed to be perceived approximately the same by a human observer, independent of the absolute level of the haziness (Air Resource Specialists, 1993).

Desired basal area The spacing or stocking levels used to guide thinning in order to leave a desired density in developing stands.

Dead fuels (Fire Behavior and Fuels) Estimating the moisture content of dead woody fuels is critical when predicting fire behavior. Dead fuels are divided into four size classes: 1 hour (flashy fuels), 10 hour (1/2-inch diameter), 100 hour 3-inch diameter) and 1,000 hour (8-inch diameter). In general, the larger fuels take longer to absorb or lose moisture.

In general, drier fuels increase the rate of fire spread, fireline intensity, and fuel consumption. Prescribed burns are used to meet a number of resource management objectives. Fire managers rely on fire behavior prediction to determine the optimum conditions for prescribed burning.

Disturbance Any relatively discrete event in time that disrupts ecosystem, watershed, community, or species population structure and/or function and changes resources, substrate availability, or the physical environment.

Glossary of Terms

Ecological Restoration

See *Restoration*

Ecosystem Diversity

The variety and relative extent of ecosystem types, including their composition, structure, and processes.

Ecosystem Services

Benefits people obtain from ecosystems, including:

1 ***Provisioning services,*** such as clean air and fresh water, as well as energy, fuel, forage, fiber, and minerals;

2 ***Regulating services,*** such as long term storage of carbon; climate regulation; water filtration, purification, and storage; soil stabilization; flood control; and disease regulation;

3 ***Supporting services,*** such as pollination, seed dispersal, soil formation, and nutrient cycling; and

4 ***Cultural services,*** such as educational, aesthetic, spiritual, and cultural heritage values, as well as recreational experiences and tourism opportunities.

Endlining

Moving logs using cables where the log is in full or partial contact with the ground

Ephemeral stream

A stream or portion of a stream that flows only in direct response to precipitation, receiving little or no water from springs and no long-continued supply from snow or other sources, and whose channel is at all times above the water table.

Fen

A peat-accumulating wetland that receives some drainage from surrounding mineral soils and usually supports marshlike vegetation including sedges, rushes, shrubs, and trees. Fens are less acidic than bogs, and derive most of their water from groundwater rich in calcium and magnesium versus a bog which receives all of the water and nutrients from precipitation (ombrotrophic).

Fire Management Plan (FMP)

A plan, which identifies and integrates all wildland fire management and related activities within the context of approved land/resource management plans. It defines a program to manage wildland fires (wildfire, prescribed fire, and wildland fire use). The plan is supplemented by operational plans, including but not limited to preparedness plans, preplanned dispatch plans, and prevention plans. Fire Management Plans assure that wildland fire management goals and components are coordinated.

Glossary of Terms

Fire Management Unit (FMU) May be any land management area definable by objectives, management constraints, topographic features, access, values to be protected, political boundaries, fuel types, major fire regime groups, and so on, that set it apart from the management characteristics of an adjacent FMU. The FMUs may have dominant management objectives and pre-selected strategies assigned to accomplish these objectives. (USDA & USDI 2004)

Flag and avoid The hanging of flagging in order to identify for the purpose of avoidance of a special feature in an area.

Forest An ecosystem characteriszed by a more or less dense and extensive tree cover, often consisting of stands varying in characteristics such as species, composition, structure, age class, and associated processes, and commonly including meadows, streams, fish, and wildlife. *(Helms 1998)*

Forest Development Road See Road Categories

Forest Health The perceived condition of a forest derived from concerns a bout such factors as its age, structure, composition, function, vigor, presensce of unusual levels of insects or disease, and resilience to disturbance. *(Helms 1998).* See also *Resilience*.

Forest Land Land that is at least 10 percent stocked by forest trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated (Helms 1998).

Forest Transportation Atlas A display of the system of roads, trails, and airfields of an administrative unit, including: a. Road and trail management objectives; b. Identification of needed and unneeded NFS roads; c. Travel management decisions; and d. Road management priorities (FSM 7700 – Travel Management).

Forest-wide Scale The greatest, most expansive spatial management scale, incorporating management emphasis areas, and may incorporate multiple uses and resources within the NFS lands managed by the Lake Tahoe Basin Management Unit.

Grapple piling Use of a track-laying low-ground pressure excavator with a with a thumb and claw, typically mounted on articulating arm. This machine is capable picking up created slash or other material to pile on slopes up to 30%.

Glossary of Terms

Group Selection With Reserves

From Helms (1998): Group Selection with Reserves is a form of uneven-aged (selection) methods to regenerate and maintain a multi-aged structure by removing some trees in all size classes either singly, in small groups, or in strips

—group selection trees are removed and new age classes are established in small groups

—group selection with reserves some trees within the group are not cut to attain goals other than regeneration within the group

Hand removal or thinning

Consists of removing trees with chain saws or lopping shears and piling or scattering the debris in open areas for later burning.

Hazard Tree

Tree hazards include dead or dying trees, dead parts of live trees, or unstable live trees (due to structural defects or other factors) that are within striking distance of people or property (a target). Hazard trees have the potential to cause property damage, personal injury or fatality in the event of a failure.

Heterobasidion (annosus) root disease

Annosus root disease, caused by *Heterobasidion annosum* (Fr.) Bref., is found in many temperate coniferous forests around the world. It is an endemic pathogen that is common and widely distributed in North America. (FSH 3409.11, Ch. 60, R5 Supplement No.: 3409.11-2010-1).

Common symptoms of annosus root disease are the same as for many other root diseases and include yellowing or thinning of crowns, reduction in tree height and lateral branches, and stress cone crops (Rippy et al, 2005, p. 11).

Heterogeneity

Biometrics term related to Forest Vegetation structure and composition: the state of being not identical in some or all parameters in one or more samples or populations (Helms 1998).

Hydrophobicity

Resistance to water absorption by severely burned soils.

Intermittent stream

A stream or portion of a stream, that does not flow year-round but only when it (a) receives base flow solely during wet periods, or (b) receives groundwater discharge or protracted contributions from melting snow or other erratic surface and shallow subsurface sources

Invasive Species

Plants, animals, and other organisms that are both nonnative to the ecosystem in which they are found and capable of causing environmental, economic, or human harm. Invasive species may compete so successfully in new ecosystems that they displace native species and disrupt important ecosystem processes.
http://www.fs.fed.us/psw/topics/invasives/

Glossary of Terms

Inventoried Roadless Area

The formal process for Inventoried Roadless Area designation varies by state; In general, geographic areas qualify for placement on the inventory to be designated if they meet one or more of the following criteria:

1. They contain 5,000 acres or more.
2. They contain less than 5,000 acres, but
    a. Due to physical terrain, natural conditions can be preserved.
    b. They are self-contained ecosystems, such as an island, that can be effectively managed as a separate unit of the National Wilderness Preservation System.
    c. They are contiguous to existing wilderness, primitive areas, Administration-endorsed wilderness, or potential wilderness in other federal ownership, regardless of their size.
3. They do not contain improved roads maintained for travel by standard passenger-type vehicles, except as permitted in areas east of the 100th meridian.

Lacustrine

Lake ecosystem; includes the lake and lake shore.

Landscape Character

A combination of physical, biological, and cultural images that gives an area its visual and cultural identity and helps to define a ‘‘sense of place.’’ Landscape character provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity.

Lentic

Stream ecosystem; includes the stream and stream bank.

Lotic

Stream ecosystem; rapidly-moving water, for example streams and rivers.

Glossary of Terms

Maintenance Levels (Road management)

Level 5 – Roads that provide a high degree of user comfort and convenience. These roads are normally double-lane, paved facilities.

Level 4 – Roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane.

Level 3 – Roads open and maintained for travel by prudent drivers in a standard passenger cars. User comfort and convenience are low priorities.

Level 2 – Roads open for use by high-clearance vehicles . Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses.

Level 1 – Intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities.

(Forest Service Handbook (FSH) 7709.58,10,12.3)

Managed Wildfire The management of naturally ignited fires to achieve resource desired conditions and objectives where fire is a major component of the ecosystem.

Mesic Of sites or habitats characterized by intermediate moisture conditions, i.e., neither decidedly wet nor dry.

Monitoring A systematic process of collecting information over time and space to evaluate effects of actions or changes in conditions or relationships.

National Forest System A nationally significant system of Federally owned units of forest, range, and related land consisting of national forests, purchase units, national grasslands, land utilization project areas, experimental forest areas, experimental range areas, designated experimental areas, other land areas, water areas, and interests in lands that are administered by the USDA Forest Service or designated for administration through the Forest Service. (USDA Forest Service FS-383 2012)

National Wild and Scenic River Area designated by Congress as part of the National Wild and

Scenic River System. (USDA Forest Service FS-383 2012)

Objection The written document filed with a reviewing officer by an individual or organization seeking pre-decisional administrative review of a plan, plan amendment, or plan revision.

Glossary of Terms

Over-snow Vehicle — A motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow. *(36 CFR Part 212 Sec. 1)*

Potential Wilderness Area — All areas within the National Forest System lands that satisfy the definition of wilderness found in section 2(c) of the 1964 Wilderness Act. Inventory criteria are listed in Forest Service Handbook 1909.12—Land Management Planning Handbook, Chapter 70—Wilderness Evaluation.

Perennial stream — A creek or river that flows all year (see intermittent and ephemeral).

Plan Components — See *Desired Condition, Objective, Program Strategy, and Standards & Guidelines.*

Prescription — Direction given for land and resource management in a given area.

Reference Conditions — The range of historic (or natural) variability in ecological structures and processes, reflecting recent evolutionary history and the dynamic interplay of biotic and abiotic conditions and disturbance patterns that form the basis for comparison with contemporary ecosystem processes and structures and are a frame of reference for designing ecological restoration treatments and conservation plans (adapted from Fulé et al. 1997).

Regeneration Method — A cutting procedure by which a new age class is created. The major methods are clearcutting, seed-tree, shelterwood, selection, and coppice. Regeneration methods are grouped into four categories: coppice, even-aged, two-aged**,** and uneven-aged (FSM 2400 Ch. 2470).

Region — An administrative area containing units of the National Forest System. There are nine NFS Regions: The Lake Tahoe Basin Management Unit is administered by the Pacific Southwest (R5) Regional Office, also referred to as the "National Forests in California". (USDA Forest Service FS-383 2012)

Resilience — The capacity of a community or ecosystem to maintain its essential characteristics, taxonomic composition, structures, or regain normal ecosystem function and development following disturbance. (Helms, 1998, Holling, 1973). See also *Forest Health*.

Resistance — The capacity of the ecosystem to absorb disturbances and remain largely unchanged. (Holling, 1973)

Restoration — The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on re-establishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions. (SER 2004)

Glossary of Terms

Riparian areas Referring to the interface between freshwater habitats and the terrestrial landscape. (Environmental Management Glossary).

Ripping A process to mitigate soil compaction. Using equipment with a toothed blade or set of heavy tines mounted at the front or rear of the equipment to break up hard ground or to tear out stumps and boulders; can be synonymous with subsoiling and tilling.

Riverine Pertaining to rivers and river bank environments.

Road activity

Road Construction – Supervising, inspecting, building, and all expenses incidental to the construction or reconstruction of a forest development transportation facility, including: location, surveying, and mapping (including the establishment of temporary and permanent geodetic markers in accordance with the specifications of the Coast and Geodetic Survey in the Department of Commerce), costs of rights-of way, and elimination of hazards. (36 CFR 212.1(h)).

Road Maintenance – The upkeep of the entire forest development transportation facility including surface and shoulders, parking and side area structures, and such traffic-control devices as are necessary for its safe and efficient utilization. (36 CFR 212.1(I)).
Road Reconstruction - Activities that result in betterment, restoration, or realignment of a road as defined below.
1. Betterment – Investment in construction activity that raises the traffic-service level of a road or improves its safety or operating efficiency.
2. Restoration – Investment in construction activity required to rebuild a road to its approved traffic-service level.
3. Realignment – Investment in construction activity that results in the new location of an existing road or portion thereof.

Road categories

Forest Development Road – A road wholly or partially within or adjacent to NFS boundary that the Forest Service has authorized and maintains jurisdiction over and that is necessary for the protection, administration, and use of lands under the agency's jurisdiction.

Temporary road – A road associated with timber sale contracts, fire activities, or other short-term access needs that are unnecessary for future resource management and not intended to be part of the forest development transportation plan.

Unclassified road – A road that is not constructed, maintained, or intended for long-term highway use. Such roads include all temporary access construction and other remnants of short-term use roads associated with fire suppression, timber harvest, and oil, gas, or mineral activities as well as travel ways resulting from off-road vehicle use.

Roadless Area See *Inventoried Roadless Area*

Glossary of Terms

Special Area

Areas of National Forest System pulic lands designated by law, or administratively, and managed to emphasize recreational and other specific related values. Other uses are permitted in the areas to the extent that these uses are in harmony with the purpose for which the area was designated. The law or order designating each area provides area specific management objectives and guidelines. An area may be nominated locally (at the unit level), and then designated for management under one of the following Special Area categories:

National Recreation Areas – Areas that have outstanding combinations of outdoor recreation opportunities, aesthetic attractions, and proximity to potential users. They may also have cultural, historical, archaeological, pastoral, wilderness, scientific, wildlife, and other values contributing to public enjoyment.

National Monuments – Areas of unique ecological, geologic, historical, prehistorical, cultural, and scientific interest.

National Scenic Areas – Areas that contain outstanding scenic characteristics, recreational values, and geologic, ecologic, and cultural resources.

National Scenic Research Areas – Areas that contain outstanding scenic values for research, scientific, and recreational purposes.

National Management Emphasis Areas – All other areas that contain unique or outstanding physical features and that contain specific physical, cultural, or political characteristics receiving specific emphasis in the legislation. (FSM 1920 and FSM 1950).

Special Interest Area (SIA)

Geographically defined federally protected management area, consisting of archaeological, botanical, geological, historical, scenic, paleontological and zoological or other special characteristics or unique values. SIAs are designated to protect and manage for public use and enjoyment and may include the protection and management of threatened, endangered or sensitive species and other elements of biological diversity; recreation or cultural significance; or historic importance.

Glossary of Terms

Special Use Permit

A locally administered special use authorization to occupy National Forest System lands for Recreation Use (such as Outfitter and Guide, campground or resort operations or commercial filming) and Recreation Resident Use. The laws, regulations, and policies governing the use and maintenance of recreation residences are those necessary to comply with federal, state, and county ordinances, building, and sanitation codes to safeguard the national forests' resources. Restrictions and special rules are designed to fit local conditions. The Forest Service generally is required to obtain fees that reflect fair market value for the rights and privileges authorized by the permits (Forest Service Manual [FSM] 2705, Forest Service Handbook [FSH] 2709.11).

Stand

A contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.
(Helms 1998)

Stand Structure

The horizontal and vertical distribution of componenets of a forest stand including the height, diameter, crown layers, and stems of trees, shrubs, herbaceous understory, snags, and down woody debris. This is based on development stages rather than absolute age. (Helms 1998).

Susceptibility

The probability that a tree or stand will be attacked by, or incur an outbreak of, an insect or pathogen. (Helms 1998)

Sustainability

Capability of meeting the needs of the present generation without compromising the ability of future generations to meet their needs.

Sustainable Recreation

The set of recreational opportunities, uses and access that, individually and combined, are ecologically, economically, and socially sustainable, allowing the responsible official to offer recreation opportunities now and into the future. Recreational opportunities can include non-motorized, motorized, developed, and dispersed recreation on land, water, and air.

Terrestrial Ecosystems

A community of organisms and their environment that occurs on the land. Four primary terrestrial ecosystems exist: tundra, taiga, temperate deciduous forest, and grassland.

Glossary of Terms

Trail Management Class

The prescribed scale of development for a trail, representing its intended design and management standards. Trail prescriptions describe the desired management of each trail, based on Forest Plan direction. These national prescriptions take into account user preferences, setting, protection of sensitive resources, and other management activities. To meet prescription, each trail is assigned an appropriate Trail Class. These general categories are used to identify applicable Trail Design Parameters and to identify basic indicators used for determining the cost to meet national quality standards.

1) ***Trail Class 1 –*** Minimal/Undeveloped Trail
2) ***Trail Class 2 –*** Simple/Minor Development Trail
3) ***Trail Class 3 –*** Developed/Improved Trail
4) ***Trail Class 4 –*** Highly Developed Trail
5) ***Trail Class 5 –*** Fully Developed Trail

(Ref. FSH 2309.18 – Trail Management Handbook – Trial Class Matrix, http://fsweb.wo.fs.fed.us/rhwr/ibsc/docs/trails/trail-class-matrix-2005-01-31.doc).

Underburn

Fire in the forest understory; a prescribed or wildfire that consumes surface fuels but not trees

Vernal pool

A contained basin depression lacking a permanent above ground outlet. An ephemeral (temporary) pool that fills with snowmelt and spring run-off.

Wild and Scenic River

See National Wild and Scenic River

Wilderness

Any area of land designated by Congress as part of the National Wilderness Preservation System that was established in the Wilderness Act of 1964. (16 U.S.C. 1131– 1136).

Glossary of Terms

Wildland Urban Interface (WUI)

An area where human habitation is mixed with areas of flammable wildland vegetation. It extends out from the edge of developed private land into Federal, private, and State jurisdictions. The WUI is comprised of two zones, the Defense Zone and the Threat Zone:

> ***WUI Defense Zone*** – the buffer in closest proximity to communities, areas with higher densities of residences, commercial buildings, and/or administrative sites with facilities (urban core). Defense zones generally extend roughly ¼ mile out from these areas; however, actual defense zone boundaries are determined at the project level following national, regional and forest policy.
>
> ***WUI Threat Zone*** – typically buffers the defense zone; however, a threat zone may be delineated in the absence of a defense zone under certain conditions, including situations where the structure density and location do not provide a reasonable opportunity for direct suppression on public land, but suppression on the private land would be enhanced by fire behavior modification on the adjacent public land.

Threat zone boundaries are determined at the project level following national, regional and forest policy. Threat zones generally extend approximately 1¼ miles out from the defense zone boundary; however, actual extents of threat zones are based on fire history, local fuel conditions, weather, topography, existing and proposed fuel treatments, and natural barriers to fire.

Woody biomass

The wood product obtained (usually) from in-woods chipping of all or some portion of trees including limbs, tops, and unmerchantable stems, usually for energy production

Appendix N: Response to Comments

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Introduction and Process

This appendix summarizes and presents the Forest Service response to public comment received during the official comment period for the LTBMU DEIS and Revised Forest Plan, which ran from June 1, 2012 to August 29, 2012. The Forest Service received 17,958 letters and emails during this period.

The concerns expressed in the comments range in nature from broad issues to technical specifics. The extensive public response demonstrates the intense interest, depth of feeling, and level of concern regarding the management of NFS lands in the Lake Tahoe Basin. The comments we received assisted us in improving both our Revised Forest Plan and the accompanying environmental analysis. We are grateful to all who commented and thus helped us shape the Forest Plan for management of NFS lands in the Lake Tahoe Basin.

As a federal agency, we are required by the National Environmental Policy Act (NEPA) to solicit public comment on our draft plans involving significant actions. We are directed to "assess and consider comments both individually and collectively." The **Content Analysis** and **Response Process** sections explain the process we followed in assessing and considering comments. The responses follow in the main body of the appendix, and are arranged by subject matter. Thus, if a letter included comments on several topics, the responses will be found in different parts of the document.

All original comment letters/emails, and other supporting documents are available in the administrative record at the LTBMU Supervisor's Office in South Lake Tahoe, CA. Letters from federal, state, and local agencies and elected officials are reproduced in this appendix, as required by Forest Service policy.

Content Analysis

The process of identifying comments in a letter/email and grouping them according to their content is called content analysis. Content analysis is a systematic process of logging, reading, numbering, and coding all public comments. The process ensures that every comment is read, analyzed, and considered. Content analysis helps to organize the comments in a logical manner so a meaningful response can be prepared.

Both original and form letters and emails were received. Original letters/emails include both those submitted by individuals and those from agencies and organizations. Form letters are two or more letters/emails that contain identical text but are submitted by different people.

Each letter or email may contain anywhere from one to several hundred comments. A comment is an identifiable expression of concern within a letter or email. The 17,958 letters and emails we received contained over 3,300 individual comments.

The initial phase of content analysis was completed by a specialized Forest Service unit, the NEPA Services Group. Each original letter/email and each form letter/email was entered in a database, read in its entirety and discrete comments identified within them. If a commenter added information to a form letter, and the additional information was not redundant to the

comment already in the form itself, this content was also analyzed. Each comment was assigned a unique tracking number and coded (i.e. grouped) according to content.

In the second phase, LTBMU Planning staff read each of the comments and refined the content groupings. Comments on the same subject were grouped and summarized into public concern (PC) statements that captured the essence of similar comments. A total of 520 PC statements were drafted.

The main body of this document consists of the Forest Service response to the comments, summarized and organized by the PC statements. Due to the volume of comments and the similarity of many comments, we chose to summarize the Forest Service response to the comments. All comments associated with a PC statement were considered in the response. The PC statements and our responses are organized by sections that mirror the order of the resource topics in the FEIS.

Response Process

The Forest Service has a responsibility under NEPA to first "assess and consider comments both individually and collectively" and then to "respond...stating its response in the final statement." The content analysis process described in the previous section considers comments received "individually and collectively." The main body of this document provides the required response to the comments, summarized and grouped by PC statements.

While the vast majority of the comments were relevant, a few fell outside the scope of decision-making for the LTBMU Plan revision. Generally, the types of comments and concerns that were considered outside of the scope include those that:

- Do not address the purpose, need, or goals of the LTBMU Plan (e.g., propose an action in areas outside the LTBMU)
- Do not directly relate to the actions proposed in the alternatives
- Suggest an action not appropriate for the current level of planning (e.g., site-specific decisions to construct new roads, campgrounds or facilities, to offer special use permits)
- Relate to day- to-day operational issues such as law enforcement procedures or road maintenance
- Propose untenable restrictions on management of the LTBMU or conflict with approved plans not being revised in the LTBMU planning process

The NEPA encourages all interested parties to submit comment as often as they wish regardless of age, citizenship, or eligibility to vote. Respondents may include businesses, people from other countries, children, and people who submit multiple responses. Every substantive comment and suggestion has value, whether expressed by one respondent or many.

It is important to recognize that the consideration of public comment is not a vote-counting process in which the outcome is determined by the greatest number of comments on a particular issue. Relative depth of feeling and interest among the public can serve to provide a general

context for decision-making. However, it is the relevance, specificity, and factual accuracy of comment content that serves to provide the basis for modifications to planning documents and decisions. Further, those who respond do not constitute a random or representative public sample because they are self-selected, unlike scientifically designed surveys or polls.

The results of this process serve two related purposes in public land management planning. The first is to fulfill the legal mandate of the NEPA and accompanying CEQ regulations. These statutes require planning teams to seek public comment on proposed actions and use them to clarify, modify, or revise analyses and conclusions in order to improve agency decision-making. The public thus provides a vital contribution to planning efforts.

The second goal is to provide the public a review of the range of concerns, background issues, and substantive comment submitted on a project, and to inform each commenter about what actions may have been taken in response to his or her comments.

The Forest Service responded to the comments in the following ways, as prescribed in 40 CFR 1503.4:

- Modifying alternatives
- Supplementing, improving, or modifying the analysis documented in the DEIS
- Making factual corrections
- Explaining why the comments do not need further agency response

Response to Comments

Planning

Planning Regulations

PC 162: The Forest Service should clarify which planning regulations they are using.

Response: Section 1.3 of the FEIS discloses which planning regulations are being used for this Forest Plan Revision Process

PC 519: The Forest Service should ensure that requirements of planning regulations are met

Sample Comment: *The 1982 Rule sets out "minimum requirements for integrating individual forest resource planning into the forest plan" at Sections 219.14 through 219.26. See 36 CFR § 219.13. In addition, Section 219.27 provides the "minimum specific management requirements to be met in accomplishing goals and objectives for the National Forest System."*

Response: The intent of Sections 219.14 through 219.27 of the 1982 Planning Rule have been met with this Forest Plan Revision.

Evaluations have been completed for Timber Suitability (Appendix G) and for Wilderness (Appendix C), including lands designated as Inventoried Roadless Areas.

Standards and Guidelines in the plan ensure that resources, such as vegetation, Recreation, Minerals, Water, Soils, Cultural and Historic, and Fish and Wildlife are protected.

Grazing allotments on this forest are currently vacant. Conditions that have changed since the 1988 Forest Plan, such as land purchases, have not affected those allotments. At the project level, the suitability and capability of those lands for grazing would be evaluated. Effects from grazing were analyzed in Section 3.4.18 of the FEIS.

Grass Lake has been designated as a Research Natural Area (March 12, 1992).

Diversity of plant, animal and tree species has been accounted for in developing the desired conditions for this forest plan.

Management Requirements set out in 36 CFR Section 219.27 have been met throughout the forest plan. Desired conditions as well as standards and guidelines lay out how resource protection, vegetation manipulation, silvicultural practices, riparian areas, and soil and water resources will be protected. Even-aged management is not considered as a silvicultural practice in this forest plan.

PC 517: The Forest Service should meet requirements of planning regulations for riparian protection

Response: The Plan includes numerous desired conditions and standards and guidelines designed to protect riparian areas, primarily in the Physical Resources and Biological Resources sections. Some, but not all, of the Forest Plan components that address riparian areas are found under

section headings for Stream Environment Zones (SEZs). The SEZ concept includes riparian areas as well as other wet areas such as bogs and fens, meadows, and marshes.

In requiring Plans to provide "special attention" for riparian areas, The 1982 Planning Regulations (219.27e) do not, as suggested by the commenter, prescribe a "buffer" intended to exclude management practices; rather they require consideration of a number of factors when "determining what management practices may be performed within these areas or the constraints to be placed upon their performance."

PC 65: The Forest Service should include a "no grazing" alternative and should analyze effects of grazing as required in planning regulations.

Response: Effects from grazing were analyzed in section 3.4.18 of the FEIS. Changes in the range resource were analyzed and any new land acquisitions within the allotments were identified. A brief analysis of the effects of the alternatives on range resources is included.

Consequences of grazing on other resources were not analyzed because all allotments are currently vacant and no applications are pending. As no grazing is occurring, there are not currently any new or ongoing consequences from grazing. Areas grazed in the past are recovering and some have undergone restoration; these trends would continue in the absence of future grazing.

Consequences of a no grazing alternative would be similar to the current condition and trends described for all potentially affected resources in the FEIS and that is why it was not analyzed in detail.

Decision Process

PC 29: Citizens or Congress should vote on changes to public use of NFS lands

Response: Decisions regarding use of NFS lands managed by the LTBMU are made by the Forest Supervisor of the LTBMU. Authority to make decisions is outlined in Forest Service Manual 1230 – Delegations of Authority and Responsibility.

Projects and plans are developed and analyzed according to the National Environmental Policy Act, which requires public involvement. The LTBMU lists current projects on the Schedule of Proposed Actions, which is available at: http://www.fs.fed.us/sopa/forest-level.php?110519. The list is updated regularly and includes contact information for the project manager. It is a good way to stay informed on what is happening on the LTBMU and to make your voice heard on projects that interest you.

PC 158: the Forest Service should give more weight to the comments of local residents than to comments of those living outside the Tahoe Basin.

Sample Comment: *"There are far too many people who live out of the area who try to govern our life style here at Tahoe…They don't understand the environment and get carried away over certain issues without seeing the complete picture."*

"It is my understanding that the majority of persons requesting additional wilderness areas are not residents of the Lake Tahoe area but live out of the region."

"People that do not live in this area should not be able to write the rules for us."

Response: 36 CFR 219.4 (1)(i) requires that the responsible official engage the public, including those interested at the local, regional, and national levels; which we have done. The process and procedure for responding to public comments is set forth in the NEPA and the CEQ implementing regulations (40 CFR 1503.4, 1506.6) as described in FSH 1909.15.

All comments on the DEIS were compiled, organized, read, and analyzed. Individual comments that relate to a particular topic of concern or resource consideration are identified, as well as the reason or rationale for the comments. It is the relevance, specificity, and factual accuracy of comments that serve to provide the basis for modifications to planning documents and support for making an informed decision. We do recognize that decisions and management actions for a national forest can directly affect those living in or near it. We appreciate your comments which include your personal and local knowledge of the LTBMU.

PC 160: The Forest Service should ensure that decisions are not made in haste and are given due consideration. The Forest Service should provide equal consideration to views of individuals and special interest groups with lots of money.

Response: Before decisions are made, resource specialists and Forest leadership review and respond to these comments, revise the preferred alternative in response to the comments, complete any additional analysis needed. This process requires considerable time and thought. We do give equal consideration to all views.

Purpose and Need

PC 268: The Forest Service should include species viability in the Purpose and Need.

Response: The Purpose and Need for Forest Plan Revision is described in Section 1.4 of the FEIS. Species viability was not identified as a new issue, trend or management concern which would change from those identified in the 1988 Forest Plan. We do however, believe that the Forest Plan provides for species viability as is required in the regulations.

Maintaining species viability, like other concepts within the 1982 regulations, is a background principle and guiding force that influences all alternatives, even though they are not specifically called out in the Purpose and Need. It is unnecessary and would be impractical to include every regulatory concept in the 1982 rules as part of the Purpose and Need.

Management of NFS Lands

PC 27: The Forest Service should use tax dollars efficiently and manage forest land properly.

Sample Comment: *"This taxpayer would like to voice the concern that his dollars go towards resource preservation, wildlife preservation and equitable shared use of the land that is used for recreation throughout the four seasons."*

Response: Opinions varied widely on appropriate use of tax dollars and proper forest management. We are in agreement with the comment above.

PC 52: The Forest Service should actively promote use of best practices.

Response: Use of best practices is actively promoted and will continue to be actively promoted under the Revised Forest Plan. The Strategies and Standards and Guidelines for all resource areas are designed to promote best practices. Best practices include the Best Management Practices (BMPs) for water quality management prescribed by the Pacific Southwest Region and the Forest Service National Core Best Management Practices. Use of these practices is required by the water quality standards and guidelines in the Revised Forest Plan.

PC 92: The Forest Service should preserve and protect NFS lands for current and future generations

Sample Comment: *"I believe you have an important decision ahead of you as the National Forest is so important to the many residents and visitors to our area. My parents first brought me to Tahoe in 1960 and I fell in love with the woods. It is important to me that it's preserved for my children and grandchildren."*

"The Forest Service often has a difficult mandate - but I grew up believing in the ideal of public wild lands for nature to carry on in perpetuity and The Forest Service as the guardian of that ideal. My husband and I moved to the foothills of the Sierra to be closer to the places we love to recreate; hike, camp, ski, boat, and bicycle. The solitude, quiet, and beauty rekindle my camaraderie with the earth and fill my heart with joy and awe. I feel very fortunate to have such locations to visit right in my 'backyard.' The hopeful child in me wants to believe that careful consideration will be given for these ideals, that I hope you share…"

"As a citizen who cares about the environment and the wildlife that inhabits it, I believe we must do everything within our power to protect both. Future generations deserve to inherit a healthy environment and a thriving wildlife population."

Response: We are pleased to see so many people expressing this concern. We have done our best to develop a Revised Forest Plan that reflects our role as public land stewards. We believe the Revised Forest Plan balances natural resource conservation and management with a variety of dispersed and developed recreation opportunities.

We also agree with the commenter who stated *"While Multiple Use management is a goal of the Forest Service, it does not mean that all the uses need to be accommodated in one place at the same time. The Lake Tahoe Basin is finite and fragile. It cannot be sliced and diced by unlimited demand for recreation."*

PC 121: The Forest Service should focus on illegal marijuana growing on NFS lands.

Response: While illegal marijuana growing significantly impacts National Forest Lands in California, it is a relatively rare issue in the Lake Tahoe Basin, due to the short growing season and high level of public land use.

PC 175: The Forest Service should provide a balance between environmental protection and economic health.

Sample Comment: *"What would Lake Tahoe be without the forests, clear waters and fresh air? Just another barren place with a bit of gambling and drinking going on. Management with both economic and environment involved, will still leave pristine, healthy wilderness."*

Response: As stated in the Planning for Sustainability section of the Plan Introduction, the Revised Forest Plan addresses ecological, social, and economic sustainability. Management direction in the Revised Forest Plan focuses on both the natural and human environments. The Tahoe Basin economy is largely based on recreation and tourism, and we recognize the importance of National Forest lands as a setting for this economy. We agree with this commenter that we can contribute to the Basin's economic health while providing adequate environmental protection. In the Social and Economic section of the FEIS (3.4.21) we have added additional analysis of the economic contribution of the National Forest to the local economy.

PC 38: The Forest Service should ensure that management practices are the best for the land and not just more practical economically

Sample Comment: *"The USFS needs to apply sound science to the management of forest lands and not merely follow the whims of commercial loggers."*

"…harvesting larger trees makes the economics of forestry activities less expensive, but the "usual" way of doing business may not be the right way, given USFS objectives"

Response: No portion of the LTBMU has been identified as suitable for timber production. Therefore, economics are not a primary consideration for forest management at the LTBMU. Consequently, cut trees will only be removed for public health and safety or ecological restoration purposes.

PC 106: The Plan should provide safeguards to prevent opening up the lands to those that would exploit the resources for their own economic gain

Sample Comment: *"Your purpose is to maintain the environment, not support corporations."*

"…but this ignores the economic benefits of keeping Tahoe the jewel of the Sierra."

"…protect our public lands from private profit's exploitation."

Response: The LTBMU has no mining or active range uses at this time, as well as no lands identified as suitable for timber production. In addition, our recreation and lands special uses are controlled by a permitting process that is outlined in law, regulation and Forest Service policy. Recreation and lands special uses help us to deliver a diverse number of recreation opportunities. Development on private lands is outside the scope of this Forest Plan, but would be regulated by the TRPA and other local and state agencies. With this in mind, exploiting the land for economic gain is not a major concern with this Forest Plan.

PC 122: The Forest Service should have more staff on the ground to reduce damage and conflicts

Sample Comment: *"Recreation use has increased at the Lake on National Forest… I've yet to see a USFS ranger or other person at a trailhead parking area or along any trail on National Forest land."*

"More should also be done to ensure that OSVs adhere to current restrictions and stay in designated areas and marked routes."

Response: The LTBMU has staff and law enforcement on the ground during busy times of year, such as during the 4th of July. Providing staff on the ground is constrained by our budgets. While we do believe that having 'boots on the ground' in order to enforce our rules and regulations is very important, it is not always possible. Therefore, we focus our efforts on the areas where there is potential for resource damage and conflicts. All of our field-going staff are encouraged to act as forest protection officers and reports any resource damage or conflicts when they feel it is safe to do so. We also encourage the public to report the same damage or conflicts, when it is safe to do so, so that we can appropriately determine where to concentrate our staff time.

PC 176: The Forest Service should make the environment the first priority.

Sample Comment: *"FS should prioritize public safety over environmental issues."*

"FS should make Lake Tahoe the first priority"

"Lake Tahoe's environment has been degraded by heavy human use and development throughout the years, and frankly, it's time to give back to the lake by strengthening protection of the public lands around the Basin."

"The environment there is unique and extremely precious and valuable.'

"…we need to ensure that any future change we make includes the concerns of all of those who can't speak for themselves (flora, fauna, water, soil)."

"You have the power in your hands to protect the life of the forest and by doing that protect the health of so many, many people."

Response: The Forest Service is mandated to manage NFS lands for multiple-uses. As such, we are asked to balance environmental protection and use of resources (including recreation). We believe that the preferred alternative does strike a good balance between these considerations.

PC 181: The Forest Service should recognize its limited ability to control nature

Sample Comment: *"We do not rule the planet, it rules us! It would be wise to remember that."*

Response: We do recognize that we cannot control nature. The Revised Plan emphasizes restoring natural ecosystem processes. This concept recognizes that nature is ultimately in control, and our role is to implement projects that better enable natural systems to adapt to change. Restoring fire to the landscape, or management that mimics the effects of fire, is

emphasized. The roles of natural disturbances such as drought, insect outbreaks, and changing climate are recognized and accounted for in management strategies.

PC 206: The Forest Service should include criteria for determining if actions would compromise sustainability

Response: The overall Desired Conditions in the Forest Plan are intended to describe sustainable social, economic and ecological conditions. Objectives are milestones in meeting the Desired Condition, Standards and Guidelines act as the boundaries, and the monitoring plan is designed to gauge where we are at in meeting the Desired Conditions and determine if we need to make any adjustments. Therefore, when taken as a whole, the Forest Plan is designed to determine whether our actions would compromise sustainability.

PC 515: (Many respondents expressed their love of the forests of the LTBMU and advocated for their protection as well as the protection of Lake Tahoe itself.)

Response: We thank you for your comments and believe that the preferred alternative will provide those protections to the lake and the forests for the life of the plan and into the future.

PC 520: The Forest Service should address its relationship with TRPA

Response: The Forest Service relationship with TRPA is described in the Forest Plan Introduction (Volume II of the FEIS), under the heading "*Relationship to Plans of Other Agencies*."

PC 211: The Forest Service should encourage humans and animals to live in harmony with each other.

Response: The Forest Service is a land manager and does not manage wildlife itself, only habitat. Conservation education programs inform residents and visitors of all ages about the natural environment in which they live, work, and play. There are no programmatic differences in conservation education between alternatives.

PC 226: The Forest Service should protect and respect the land and all creatures.

Response: The Draft Management Plan contains management direction that aids in the protection of terrestrial and aquatic species as well as associated habitat. The specific direction can be reviewed in Desired Conditions in the Revised Forest Plan as well as the Objectives and Standards and Guidelines that are intended to aid in the attainment of those Desired Conditions.

Forest Plan Management Direction

PC 64: The Forest Service should clarify the relationship of the Draft Plan to the other alternatives - what applies in which alternative.

Response: The Revised Forest Plan applies to Alternative E – The Preferred Alternative. To further aid the reader in understanding how the Forest Plan would differ by Alternative, we have included two Appendices. Appendix H compares the management strategies by Alternative.

Appendix I compares the Alternatives by Objective. Appendix J is also included to show the Forest Plan Standards and Guidelines from the existing Forest Plan, which is Alternative A.

PC 134: The Forest Service should include specific standards and guidelines to protect the Upper Truckee River until Congress acts on the agency's recommendation.

Response: A Forest Plan Standard has been added that requires management of the recommended segment of the Upper Truckee River to protect its free-flowing status and the outstandingly remarkable river values identified in the Record of Decision for the Eight Eastside Rivers FEIS (1999). The specific management requirements are in FSH 1909.12, Chapter 82.5 – Interim Management of Eligible or Suitable Rivers.

PC 195: The Forest Service should identify smoke management BMPs in the Forest Plan.

Response: Smoke management BMPs are developed at the project specific level. Because of the variability in both weather as well as placement on the landscape involved in planning prescribed fire it does not make sense to identify smoke management BMPs in the Forest Plan. However, the Forest Plan does identify desired conditions, objectives, strategies and standards and guidelines which aid in the development of project specific smoke management BMPs.

PC 274: The Forest Service desired conditions should incorporate the range of natural disturbances (this does not include disturbances caused by logging) that comprise a fully functioning, healthy ecosystem, including fire and insect pests and the contribution of resulting dead standing and fallen trees to soil productivity and wildlife habitat.

Response: The desired ranges of structural classes for each major forest type are a reflection of disturbances in a more naturally functioning ecosystem where such disturbance regimes can occur without human intervention. The current forest conditions stem from the Comstock-era logging, as well as efforts over the past 100 years to suppress wildfires. Therefore, one of the primary natural drivers that would have shaped the landscape while the post-Comstock-era forest was re-initiating (i.e. fire) did not occur. Likewise, other disturbance factors such as drought related mortality are quickly removed to lower the risk of nearby trees becoming infested by bark beetles. Natural and historic ranges of variability are discussed during project development to best prescribe surrogate treatments that more closely resemble what would be expected if a naturally occurring disturbance were to occur. Prescriptions do include standing snags, down woody debris, and other resource protection measures.

PC 58: The Forest Service should make the time periods for attainment for objectives more specific - "the life of the Plan" is not specific enough.

Sample Comment: *"The planning horizon of the Plan is stated as the "next 10 to 15 years" on page 1- 6 of the EIS. However, the current Plan has been in effect for the past 24 years. Therefore, the LTBMU could be required to implement actions by 2023 (assuming the Plan is adopted in 2013 and has a 10 year life), by 2028 (assuming the Plan is adopted in 2013 and has a 15 year life) or by whenever if there is a lack of funding or policy direction to prepare a new Plan as required by law. These problems must be addressed by stating specific dates (month, day and year) or specific time (e.g. 5 years) from Plan adoption for implementing these Objectives. Also, the Plan should indicate how implementation would be staged so as to avoid potential significant impacts and to judge progress towards full implementation of the Objective."*

Response: We have revised the Objectives to make them more consistent. It is our belief that future funding will primarily be allocated by Congress. While we have estimated future funding levels for analysis purposes, in fact, we cannot know with certainty what level of funding we will receive in any given year. Changing conditions such as wildfires can shift priorities, adding additional uncertainty. Thus it is not possible to be as precise as the commenter has requested. The details of staging implementation will be covered in project-specific NEPA analysis.

PC 85: The Plan should include the nonurban Santini-Burton parcels in surrounding or adjacent management areas instead of having them in their own management area

Response: Parcels acquired under the Santini-Burton Act were designated as a separate management area in the 1988 Forest Plan and this designation is continued in the Revised Forest Plan, largely because the Santini-Burton Act restricts the uses of these lands. Treating them as a management area helps to ensure that the provisions of the Act are followed.

PC 208: The Forest Service should ensure that all standards are specific enough to preclude exceptions.

Response: While some Forest Plan S&Gs are very specific, others are broader to accommodate a wide range of conditions; in these cases more specific direction is prescribed at the project level. We have updated standards and guidelines to improve the process by which resources are considered by interdisciplinary planning teams in project design.

PC 81: The Forest Service should demonstrate that Plan components are supported by science.

Response: The FEIS explains the effects of implementing the Plan components in an analysis that is backed by science. The FEIS also incorporates the results of a science review that evaluated the use of science in the FEIS.

PC 508: The Forest Service should clarify management direction with respect to Alpine Meadows and Northstar Ski Area boundaries.

Response: Ski area permit boundaries are described in the special use permits. The Revised Forest Plan does not alter any special use permits currently in effect. The FEIS has been clarified by removing information that may have been confusing.

Backcountry Management Area

PC 4: The Forest Service should expand backcountry management areas.

Sample Comment: "*The Draft Plan fails to classify lands as backcountry that are, in fact, used primarily for backcountry recreation. Additional lands should be classified as "backcountry" and "semi-primitive non-motorized", including areas north and south of the Mt. Rose highway, the area east of Brockway Summit, and Blackwood Canyon."*

Response: As described in Chapter 2 of the FEIS, Alternative E proposes to increase the amount of acreage managed as Backcountry Management Area by approximately 3,800 acres from what is proposed in Alternatives A, B, and C. The Stanford Rock Backcountry area lies between Blackwood and Ward Creeks. A number of other factors, other than solely recreation use, are considered when designating lands as Backcountry. This area was proposed because it only has one road, at this time the need for more roads is not anticipated for future management, it contains PACs, its boundaries were drawn to exclude the WUI, and it is directly adjacent to wilderness and roadless areas. Additional Backcountry areas were proposed in Alternative D.

In the DEIS, some IRA lands were incorrectly mapped as General Conservation. This mistake has been corrected in the FEIS.

PC 15: The Forest Service should prohibit all development and motorized use in Backcountry

PC 383: The Forest Service should provide more protective management direction to maintain the wilderness character of roadless areas.

Sample Comment: "*The backcountry and semi-primitive non-motorized designations in the Draft Plan arbitrarily exclude over-snow vehicles from their non-motorized designations."*

Response: Alternatives B, C, D and E propose to manage Backcountry Management Areas as described in the Revised Forest Plan Part 2.3 Management Areas and Suitable Uses. Development of these lands is generally prohibited. Exceptions are noted in the Suitable Uses and Management Activities Table in the Revised Forest Plan. Management activities are minimal, but may have a limited influence on the landscape. Native surface roads are present in some backcountry areas and road re-construction may be permitted in some Backcountry areas where additional restrictions do not apply. OSV use is limited to designated areas (see Revised Forest Plan Map 18).

Backcountry Management Areas fill a recreation niche between designated Wilderness and General Conservation management areas. Most Backcountry Management Areas are also Inventoried Roadless areas, which must be managed such that future Wilderness designation is not precluded.

The 1988 Plan included exceptions to the Semi Primitive Non-Motorized ROS class for OSV use in several IRAs. These exceptions are carried forward in all of the alternatives, which retain current open and closed designations for OSV use.

The ROS Users Guide describes types of access and facilities, lists typical uses for each class, and other information, including recreational settings. ROS classes are not designations or management prescriptions but serve as a guide for designing management prescriptions (in this case, backcountry). The ROS classes provide planning guidance, but should not be construed as absolute direction. The ROS Users Guide recognizes the potential for seasonal differences in setting classes. Activity setting and experience opportunities may change between the seasons, for example, OHV use versus OSV use.

PC 76: FS should retain all roadless areas in their current status and manage them to retain roadless character.

Response: Each alternative proposes retaining all previously identified Inventoried Roadless Areas (IRAs) and will manage them as Backcountry Management Areas. Backcountry Management Area management concepts (e.g. natural landscapes, dispersed recreation, and limited management) are described in Section 2.3 of the Revised Forest Plan (See PC -15). Alternative D proposes adding additional areas to the Backcountry MA; these would be managed in relatively the same way as IRAs. The Preferred Alternative, Alternative E would add roughly 3,600 acres of Backcountry between Ward and Blackwood Creeks (Stanford Rock).

PC 118: The Forest Service should update the roadless area maps.

Response: The Inventoried Roadless Area maps used in the Revised Forest Plan are current. They are the maps contained in the 2001 Roadless Area Conservation Rule (36 CFR 294). Due to ongoing litigation it is outside the scope of this plan revision to alter the published Inventory Roadless Areas that are part of the 2001 Roadless Rule.

Adaptive Management

PC 49: The Forest Service should implement adaptive management and amend the Plan as needed to be consistent with current science and to respond to changing trends in natural resource conditions.

Response: It is Forest Service policy to implement adaptive management. The current Plan has been amended numerous times and we expect the Revised Forest Plan will also be amended in response to changing conditions and new science. Several commenters expressed concerns that we would not be able to change the Forest Plan; however, the Forest Supervisor will be able to amend the Forest Plan as needed, with the exception of decisions such as Wilderness or Wild and Scenic River designation which require higher level approvals.

PC 111: The Forest Service should incorporate the adaptive management programs set forth in the 2001 and 2004 Framework decisions.

Response: The adaptive monitoring program specified in both the 2001 and 2004 Sierra Nevada Forest Plan Amendment Records of Decision is accomplished at the Regional Office level in coordination with the research station. Broadscale monitoring will continue to be accomplished at the regional level even after the forests of the Sierra Nevada have undergone Forest Plan Revision.

The 2001 and 2004 Framework Decisions amended the 1988 LTBMU Land and Resource Management Plan. The Record of Decision for this Forest Plan Revision will put in place a new Forest Plan for the LTBMU, which includes a monitoring plan as Appendix A. The monitoring plan will be adjusted as needed to respond to new information and unanticipated changes in conditions which meets the intent of adaptive management.

Use of Science

PC 159: The Forest Service should always use science in planning even if it is not the most important consideration.

Response: Science is used in all Forest Service planning that involves natural resource management. The National Environmental Policy Act (NEPA) requires a systematic, interdisciplinary approach to ensure integrated application of the natural and social sciences and the environmental design arts in any planning and decision making that affects the human environment (42 U.S.C. 4332(2)(A)).

Alternatives

PC 67: The Forest Service should analyze a reasonable range of alternatives.

PC 69: The Forest Service should include an alternative that takes a more moderate approach to fuel management and restoration.

Sample Comments: *"…the DEIS should have considered an alternative that corresponds to the 2001 Framework decision, which generally allows substantial forest thinning of trees up to 20" dbh*

"…that would institute an active management approach that would result in more active management than Alts. B and C (and A), but would do so in a non-commercial, ecological approach that would focus on actively managing forests, including mature trees, to accomplish ecological goals, but by actively creating habitat structures without commercial logging—i.e., without removing wood commodities (sawtimber or biomass)"

"The alternatives presented in the DEIS fail to meet the requirements of NEPA and NFMA because they only propose activities at the extremes and do not include a more moderate approach to fuel management and restoration."

"The draft plan, to approach a full range of alternatives as called for by NEPA, should have contained an alternative that required less intensive fuel treatments in order to retain many more medium to large diameter trees and a higher degree of canopy cover, to the benefit of wildlife. Some wildlife, such as the California spotted owl, definitely depend on a closed canopy cover."

Response: Chapter 2 of the FEIS describes the alternatives and explains the process used to develop them. Sections 2.3 and 2.4 describe the alternatives that were considered in detail and how they address the issues. Based on the comments received during the comment period we added Alternative E to the alternatives that are considered in detail. Section 2.5 briefly describes the alternatives that were considered but not analyzed in detail along with the rationale for why they were excluded from detailed analysis; Section 2.5 has been updated to include 8 alternatives. We believe that with the alternatives presented that we have analyzed a range of alternatives that meets the requirements of the planning regulations and the CEQ requirements.

PC 70: The Forest Service should include the document "National Forests in the Sierra Nevada: A Conservation Strategy" as an alternative.

Response: Chapter 2, Section 2.5.8 describes the rationale for why this alternative was not considered in detail. This document is regionwide in nature and not as site-specific as the proposed LTBMU Forest Plan. In addition, this document is focused on habitat and species management and does not adequately take into account the other multiple use mandates that are the foundation of Forest Service management.

PC 344: The Forest Service should modify the preferred alternative to allow 15% expansion in ski areas.

Response: The 15% expansion amount is identified in Alternative C. The preferred alternative, Alternative E, includes approximately a 10% expansion in ski areas based on current expected needs for expansion. Recreation expansion has been defined in Section 2.2 of the Revised Forest Plan. Effects from expansion of ski areas have been updated in Chapter 3, Section 3.4.19 - Recreation.

PC 61: The Forest Service should consider combining elements of alternatives.

Response: The Preferred Alternative, Alternative E, was developed in response to comments and combines elements of several alternatives. Alternative E is described in Chapter 2 of the FEIS.

PC 66: The Forest Service should consider an alternative like the 2001 Framework decision that 1) retains large trees; 2) allows for thinning of small to medium size trees; and 3) limits recreational expansion into wildlife habitat.

Response: Please see Section 2.5 of the FEIS, Alternatives Considered but Eliminated from Detailed Study.

PC 71: The Forest Service should explain why an alternative was not considered that recommends wilderness designation for all roadless areas and wild and scenic river recommendations for all eligible rivers

Response: All Inventoried Roadless Areas (IRAs) were evaluated for wilderness potential; this analysis is presented in Appendix C. IRAs were evaluated based on Capability, Availability, and Need, using the process described in Forest Service Handbook 1909.12, Chapter 70. Based on this evaluation, the two IRAs with the highest ratings were included in the alternatives - Dardanelles and Freel/Jobs Peak.

Wild and Scenic River recommendations are based on two determinations: eligibility and suitability, which are defined in Forest Service Handbook 1909.12 Chapter 80. To be eligible, a river must be free-flowing, and must possess one or more "outstandingly remarkable values" (ORVs), as defined in the Handbook. The suitability criteria defined in the Handbook are applied to determine whether an eligible river should be recommended. These criteria include a number of land ownership and management considerations. Thus, not all eligible rivers are suitable and may not be recommended.

See Appendices B and C and Section 2.5 in the FEIS for further discussion.

PC 228: The Forest Service should select an alternative that includes more aggressive forest management than Alternative C.

Sample Comment: *"My only complaint with Alt. C regarding forest management is that it is not aggressive enough. Our forests are in bad shape. They are much, much too crowded and will catastrophically burn if something isn't done soon. We should be spending all available resources on managing our forests. Stand health is much more important to the long-term health and economic prosperity of the Tahoe basin than any other factor affecting our forests."*

Response: We agree that there is an urgent need to continue reducing hazardous fuels and restore forest health, and our current fuels program was developed in collaboration with all land ownerships and jurisdictions in the Lake Tahoe Basin - the 2007 Lake Tahoe Basin Multi-Jurisdictional Fuel Restoration and Wildfire Prevention Strategy. We have treated close to half the WUI at this time. Alternative B would continue this work at our current pace. The vegetation management parameters in Alternative C represent the most aggressive vegetation management program that we think we can reasonably accomplish.

PC 371: The Forest Service should consider an alternative that separates winter motorized and non-motorized users.

Response: All alternatives provide for separation of winter motorized and non-motorized users on the approximately 48% of NFS lands managed by the LTBMU that are closed to motorized

use. Lands open to motorized use are also open to non-motorized use, which means that non-motorized uses are allowed on all NFS lands managed by the LTBMU.

PC 510: I support Alternative A

Sample Comment: "…would best serve the environment by allowing needed active management to reduce fuel loads and promote forest health. These alternatives would also best meet the needs of the community by allowing for continued and expanded recreation access."

"I support fuels management practices."

"…would appreciate if we are allowed to enjoy the forest as we do now as a multiuse area, which includes all current forms of non-motorized and motorized recreation!"

"…neither of these alternatives will impact snowmobiling in the basin".

Response: There were multiple commenters who expressed their support for Alternative A for various reasons ranging from support for fuels management activities to continuing to provide for both motorized and non-motorized recreation opportunities. Comments that state a position for or against a specific alternative are appreciated as this gives the Forest Service a sense of the public's feeling and beliefs about a proposed course of action. Such information can only be used by the decision maker(s) in arriving at a decision and not for improving the environmental analysis or documentation.

PC 511: I support Alternative B.

Thank you for your support. We have modified Alternative B to reflect many of the comments we received, and believe that Modified Alternative B (FEIS Chapter 2) is an improvement. We believe this alternative provides the best balance of recreation opportunities and natural resource protection and management, and is the best choice overall to maintain or achieve our desired conditions.

PC 512: I support Alternative C.

Sample Comment: *"…it supports the most aggressive forest management."*

"I support alternative C because it would add more parking on the East shore."

"…we believe Alternative C provides the best approach to managing the LTBMU for the users."

Response: There were multiple commenters who expressed their support for Alternative C for various reasons ranging from the more aggressive nature of fuels management to providing more parking along the East Shore. Comments that state a position for or against a specific alternative are appreciated as this gives the Forest Service a sense of the public's feeling and beliefs about a proposed course of action. Such information can only be used by the decision maker(s) in arriving at a decision and not for improving the environmental analysis or documentation.

PC 513: I support Alternative D

Response: Alternative D is the result of a variety of suggestions received during scoping and would provide the lowest level of active management of any of the alternatives. While this approach would benefit some resources, analysis showed that it did not provide the best balance when considering a range of recreation opportunities and management of multiple natural resources. Wilderness designation would eliminate opportunities for mountain biking and snowmobiling in some popular areas. Effective fuels reduction would be very challenging given the tree removal limitations outside the WUI defense zone. This alternative also relies heavily on prescribed fire for vegetation management; analysis revealed that air quality restrictions and fire safety considerations would limit our ability to move towards our desired conditions for forest vegetation.

PC 170: The Forest Service should include an active management, non-commercial alternative.

Response: The majority of treatments proposed in the plan are non-commercial for a variety of reasons. These include limited accessibility to remove woody material(i.e no roads, steep slopes), no product value to the wood being cut and/or removed, and sensitivity of various habitats (e.g. spotted owl or goshawk protected activity centers) that limits treatments to hand only.

The Forest Service is reducing higher than natural fuel loads, meaning that some fuels can be removed while other must be altered in place or burned. Re-introducing the role of fire that has been absent from many forest stands is a primary goal as well. Although some wood is removed in the form of a sale, these treatments are generally not a commercial operation. There are extremely few instances where such material removed from one location can be utilized on barren areas to increase nutrient cycling. We do, however, utilize such materials for dust abatement, mulch, slope stabilization and control of regeneration.

See wildlife comment response to use of coarse woody debris and snags. These features are retained in forest health and hazardous fuels treatments and analyzed for during project development and analysis.

We agree that some trees can be girdled or otherwise killed in place for use as snags by wildlife. This option has been added to forest vegetation S&Gs in the Revised Forest Plan.

PC 499: The Forest Service should consider an alternative that relies more on biomass removal and strategies other than prescribed fire; and should develop markets for chipped wood instead of burning piles which causes air pollution and deposition into Lake Tahoe.

Response: Wood products do not drive the alternatives; rather the desired conditions and principle methods for achieving them are the drivers. As much as feasible, biomass strategies are a part of projects that have the possibility for wood removal. In addition to a biomass emphasis in the forest plan, there are multi-jurisdictional strategies in place to which the LTBMU is a participant; there is a Coordinated Resource Offering Protocol (http://www.crop-usa.com/tahoe/) evaluation in place for the Lake Tahoe Basin; and there is a Master Stewardship Agreement in place between the US Forest Service/LTBMU and Placer County for the removal of biomass.

Conducting research and developing markets for wood products that could be utilized from management treatments on national forest system lands is beyond the scope of this plan. Staff has participated in coordination with researchers and on multi-jurisdictional teams to identify potential sources and outlets for woody materials. The unit has also contributed to a Coordinated Resource Offering Protocol, which is done every 5 years to assist wood purchases in determining likelihood of availability of wood material sources. Complicating the removal of utilizable woody material is the restrictiveness of state regulatory agencies, resulting in either avoiding areas or leaving the material for prescribed burning.

We agree that it is preferable to remove and utilize woody material that in the absence of any market or other use will be burned in piles. Past project treatments have utilized woody material even when the transportation cost of delivering such material exceeded the value of the material at the facility. This was the case when outlets for woody material existed but when they do not exist, it is infeasible to make such deliveries. The proposed biomass-to-energy facility at Cabin Creek landfill in Placer County would provide such an outlet and the LTBMU has a Master Stewardship Agreement in place with the County to allow for biomass utilization from projects on NFS lands. However, the planning of this facility has been contested by individuals and organizations and may end up in court. In a few instances small quantities of wood logs, chip or mulch have been diverted from burning to be used in support of stream and meadow restoration, road decommissioning, hill slope stabilization, and dust abatement.

The LTBMU must comply with air regulations and would not prescribe burn more than is permitted. In addition, the capacity of the unit and other sources of qualified human resources to conduct prescribed burning would limit the amount burned each burn period. The FEIS assumes that all piles created would be burned, but for reasons mentioned above, this would not actually be the case. Instead, a backlog of piles would persist in project areas until regulatory requirements, the burn plan prescription, and the capacity of the unit to conduct the burn all coincides.

PC 492: The Forest Service should consider an alternative that attempts to establish a fire regime in the Basin comparable to that which occurred prior to large scale fire suppression.

Response: As stated by the commenter, the Revised Forest Plan and FEIS disclose historic fire regime characteristics. The alternative proposed by the commenter is already within the scope of the alternatives being considered. As stated in the desired conditions, acceptable fire effects, fire frequency, and acres of fire can be met in all the action alternatives. However, prescribing acres of managed wildfire, or over-reaching objectives of prescribed fire could prove to be unreasonable given limited opportunities as disclosed in the Fire and Fuels analysis. Further, the current situation in the LTBMU is no longer the same situation that existed when the pre-settlement fire regime was established. Today the LTBMU is a WUI forest, and risk management is the primary concern when managing fire. Further, LTBMU is constrained by a host of regulations and uncertainties related environmental conditions. Alternatives B and E provide the flexibility to make the most progress toward desired conditions using fire when appropriate, and using surrogates when necessary.

PC 223: The Forest Service should include an alternative similar to Alt D that also utilizes high and mixed severity fire to create early and mid-seral habitat outside of the defense zone, and

prohibits post-disturbance (e.g., fire, beetle kill, etc.) salvage logging outside of the Defense Zone.

Response: The suggested alternative is so similar to Alternative D that it was not considered in detail. The main difference between what is suggested and Alternative D is the use of high and mixed severity fire. Under current vegetation/fuels conditions we consider use of high severity fire too great of a risk. While we design prescribed fire treatments to generally burn at low severity, sometimes treatments result in patches of mixed or high severity.

Analysis

PC 11: The Forest Service should take into account impacts resulting from BMP failure.

Response: FEIS Section 3.3 lists the assumptions common to all alternatives. For the analysis in the FEIS it was assumed that BMP's would be implemented and that they would be effective under all of the alternatives. This assumption is made because it is impossible to predict when properly designed BMP's will fail.

Implementation monitoring is used to identify any deficiencies in BMPs as soon as they are recognized, and measures are then implemented to correct the deficiencies.

PC 50: The Forest Plan should identify high risk issues.

Response: The issues that were identified through scoping are described in detail in Section 1.10 of the FEIS. The four major issue areas include Watershed Health and Aquatic Ecosystems, Terrestrial Ecosystems, Recreation and Access and Travel Management.

PC 60: The Forest Service should provide more detailed analysis when changing suitable uses.

Sample Comments: *"To the extent the Final Plan reflects "zoning" changes, Standards or "suitable uses" designations that would alter existing management prescriptions, the Forest has not conducted sufficient site-specific analysis."*

"Implementation of any action alternative analyzed in this DEIS that eliminates snowmobile, motorized and mountain bike use is premature without such site-specific analysis."

Response: Suitable Uses for Alternative E are described in the Revised Forest Plan (FEIS, Volume II) in Chapter 2.3 – Management Areas and Suitable Uses and in Table 5 of the Revised Forest Plan. Changes in suitable uses are reflected in the effects analysis. Analysis of suitable uses determinations can be found in the effects analysis in each resource section of Chapter 3 of the FEIS. Impacts due to changes in management area and/or wilderness recommendation can be found in each individual resource section of Chapter 3. As a programmatic document, this FEIS has analyzed the suitable uses to that scale. Analysis specific to land use designations can be found in the Recreation and Access sections of the FEIS (3.4.1 and 3.4.19).

PC 172: The Forest Service should provide an evaluation of how well current plan goals were achieved.

Response: At the beginning of the Forest Plan Revision Process, the LTBMU completed a Comprehensive Evaluation Report (CER) and an Analysis of the Management Situation (AMS) was also prepared in support of Plan revision. The CER and AMS evaluate current conditions and trends in the Forest Plan area that contribute to social, economic, and ecologic sustainability as well as whether or not the desired conditions, objectives, and guidelines are still appropriate. Using this information, the CER then identifies needed changes to the Forest Plan that will better facilitate achieving the revised desired conditions, goals, and objectives. The current CER covers the time period from the implementation of the 1988 LTBMU Forest Plan to the present. In Chapter 3 of the CER, the current conditions and trends (including how well current plan goals were achieved) are discussed for each resource area.

PC 24: The Forest Service should provide rationale for changes in management areas.

Sample Comment: *"Can you explain more about the new land allocations in the plan and how you made the decision to collapse them? Especially the old growth forest emphasis area and how old growth will continue to receive protection?"*

Response: The term land allocation is specific to the Sierra Nevada Forest Plan Amendment (SNFPA); the 1988 LTBMU Forest Plan and the Draft LTBMU Forest Plan use a management area system. The SNFPA land allocations have been incorporated into the Revised Forest Plan in several ways, as described in FEIS Section 2.6.1, in the subsection *The Identification of the Suitable Uses for Each Management Area*.

While the SNFPA amended the 11 Sierra Nevada Forest Plans for several resource areas, the current revision covers all resource areas. Any given project decision needs to consider not only the resources covered in the SNFPA, but a host of others, including special area designations, scenic integrity, and special use permit areas. We believe the most practical way to do this is to include maps (resource overlays) that show the location of resources that require special consideration, and then link the areas on the maps to Desired Conditions, Strategies, Objectives, and Standards and Guidelines. (Note that locations on the maps are shown for planning purposes and generally must be field-verified.) Removing the term "land allocations" does not in itself lessen the protection provided to any given resource. Resource protection is provided through the interworking of the Desired Conditions, Strategies, Objectives, and Standards and Guidelines.

The 1988 Forest Plan included 21 geographic-based management areas (e.g. Fallen Leaf, East Shore Beaches). While we ensure that projects are consistent with this direction, this system has proved less useful over time. Working with 21 management areas plus 10 SNFPA land allocations proved unwieldy and somewhat confusing at times. We found that a system of 4 management areas plus the resource overlays best meets our current business needs. *(see PC 25 for further discussion of the Old Forest Emphasis Areas.)*

PC 57: The Forest Service should address how current practices and other factors have or have not contributed to movement toward or away from Desired Conditions.

Sample Comment: *"The three key topics which relate to Volume 2 are Part 1: Vision, Part 2: Strategy, and Part 3: Design Criteria. What is missing in this formulation is "Assessment". The*

USFS should address how current practices and other factors have or have not contributed to movement toward or away from Desired Conditions."

Response: The assessment phase of the revision process culminated with the publication of the Comprehensive Evaluation Report (CER), which is available on our website. The findings and results in the CER were then updated and summarized in Chapter 3 of the FEIS in the Affected Environment sections for each resource area, which describe the current conditions and trends. The effects of the alternatives, including the No Action alternative (Alternative A) are summarized at the end of each Chapter 3 resource section and discussed in terms of how effectively each of the alternatives would maintain or move the resource towards attainment of the desired conditions.

PC 93: The Forest Service should evaluate the potential environmental impacts associated with every aspect of all alternatives that increase the need for maintenance or enforcement to maintain conditions if funding for these additional needs is reduced or eliminated.

Response: We have analyzed reasonably foreseeable effects, and have avoided speculative conclusions, as directed by the NEPA regulations. The analysis is based on a set of assumptions listed in Section 3.3 of the FEIS, which include assumptions about budget. The level of detail in a programmatic EIS such as this one is always less than in an EIS that analyzes specific actions.

PC 171: The Forest Service should explain why there are competing goals/objectives in the Forest Plan. The Forest Service should provide scientific rationale for Forest Plan components

Response: We recognize that it is not possible to make progress towards every Desired Condition on every project. This is explained in the Forest Plan Consistency section of the Plan Introduction. The effects of implementing the plan components are disclosed in Chapter 3 of the FEIS; best available science was used for this analysis and a science review was conducted to ensure science was used appropriately. The report prepared as a result of the science review is available in the project record along with responses to the review comments.

PC 518: The Forest Service should improve its analysis to comply with NEPA

Response: The FEIS has been written to comply with NEPA. Analysis for programmatic plans such as this one is somewhat different than analysis for a specific action; the Revised Forest Plan does not authorize projects or activities. Analysis for programmatic plans is further discussed in Appendix O.

Communication and Collaboration

PC 46: The Forest Service should consider a management strategy similar to the Quincy Library Group, where interest groups come together and compromise for the benefit of all.

Response: The use of collaborative planning (similar to the Quincy Library Group) is becoming more common in project planning in the Forest Service. At the LTBMU we have used collaborative planning in developing the 10 year multi-jurisdictional fuels reduction strategy and have initiated a collaborative effort among winter recreationists in the Mt. Rose corridor. We expect to continue to use this type of planning in those circumstances where there is a great deal of controversy over our management activities.

PC 34: The Forest Service should encourage the use of partnerships and volunteers to achieve management goals

PC 55: The Forest Service should collaborate more with the public and advocacy organizations

Response: Grassroots stewardship is critical to sustainability and promises to become even more critical in the future as financial resources become uncertain. Private dollars, volunteer efforts and leveraging resources through partnerships will be increasingly necessary to achieve a sustainable Lake Tahoe.

The following are a few examples of how grassroots stewardship currently helps the Forest Service achieve sustainability:

1. Volunteers help with conservation education in the local schools or at interpretive sites
2. Tahoe Rim Trail Association and Tahoe Area Mountain Biking Association volunteers help to ensure a trail system that provides a sustainable recreation experience.
3. Tahoe-Tallac Association and the Tahoe Heritage Foundation volunteers contribute to sustainable recreation on the South Shore by providing the volunteer workforce at the Tallac Estates and Valhalla.
4. Desolation Wilderness volunteers help to preserve one of our nation's most popular wilderness areas through trailhead and backcountry naturalist programs, visitor education, wilderness staff support for office and field projects and backcountry trail maintenance and campsite restoration.

PC 28: The Forest Service should communicate better with public and attempt to better understand user's views, and should maintain ongoing communication with the public to update policies.

Response: We strive continuously to improve our communication with the public on proposed actions and new policies. A wealth of information can be accessed on our website at http://www.fs.usda.gov/ltbmu. We also regularly provide news releases to local and regional newspapers, and give radio and television interviews.

Public involvement for the Forest Plan revision is summarized in section 1.9 of the FEIS. Public involvement began in 2004 with an interagency collaborative process called Pathway 2007 and continued with public meetings and workshops in 2008, 2010, and 2012.

PC 33: The Forest Service should collaborate with adjacent forests on a broad array of management issues including wildlife corridors and climate change.

Sample Comment: *"…many natural resource issues must be addressed across administrative boundaries, including protecting and re-connecting habitat for wide ranging species, ensuring that range-wide climate adaptation efforts are facilitated, and ensuring that natural processes such as wildfire are managed consistently across the range."*

Response: The Forest Service is beginning to incorporate more landscape scale planning in response to a broad range of issues. We have collaborated with adjacent forests during this revision process and expect to continue, especially on these issues in the near future. It is worth

noting that, due to the geographic nature of the Lake Tahoe Basin, most of the boundary is in remote, high elevation areas.

PC 35: The Forest Service should collaborate with TRPA and the state and local agencies to reduce environmental impacts in the Tahoe Basin.

Response: The Forest Service coordinates with TRPA and state and local agencies on a regular basis. The Environmental Improvement Program (EIP) is one of many examples. Several commenters suggested that collaboration could be used to resolve a number of issues, such as parking and congestion at popular recreation sites, as well as environmental impacts. While we understand the frustration, Forest Plan Revision does not address site-specific issues, but we will consider these comments as we move forward.

PC 516: The Forest Service should have held additional public meetings outside the Tahoe Basin for the release of the DEIS and Draft Plan.

Response: In addition to the four meetings held within the Lake Tahoe Basin, the LTBMU also held a webinar which included the same presentations that were given at the public meetings, and provided an opportunity for the audience to phone or email questions which were answered live during the webinar. The webinar presentations were then made available to the public on the LTBMU website. The webinar format was used to reach as many people as possible while minimizing energy consumption and costs.

Access and Travel Management

PC 476: The Forest Service should clarify their ATM planning process.

Response: Refer to the Access and Travel Management strategy in the Revised Forest Plan. The ATM planning process involves a strategic plan where the basin was divided into planning areas which subsequently became a project area for NEPA analysis. Through the NEPA process each ATM area is developed into a proposed action. Collaborative processes are used to involve agencies, stakeholders, and the public for the development of alternatives. After analysis and public input are complete the Forest Service selects an alternative and implements the ATM in that area.

PC 472: The Forest Service should complete subparts A and B of the Travel Management process.

Response: The LTBMU Travel Analysis, which identifies the minimum road system, was completed in 2011 and the LTBMU MVUM was established in 2010. These two processes complete subparts A and B of the Travel Management process.

Roads and Trails

PC 26: The Forest Service should maintain current public uses (not prohibit any existing uses) and should not close roads and trails.

Response: Alternatives A, B and E (the preferred alternative) do not include closures.

PC 489: The Forest Service should maintain a transportation system that is adequate to manage the forest.

Response: The LTBMU Travel Analysis Process confirmed that the ATM process has identified the minimum road system necessary to manage the forest. Adjustments to the road and trail system are made on a project basis as needs are identified, to mitigate resource concerns or provide access for specific management needs.

PC 190: The Forest Service should evaluate the need for roads that may detrimentally impact streams or wildlife and minimize impacts.

PC 409: The Forest Service should consider the effects of more trails on natural resources.

PC 408: The Forest Service should ban mountain bikes in natural areas.

Sample Comments: *"Mountain biking accelerates erosion, creates V-shaped ruts, kills small animals and plants on and next to the trail, drives wildlife and other trail users out of the area, and, worst of all, teaches kids that the rough treatment of nature is okay (it's NOT!). What's good about THAT?"*

Response: Refer to the Access and Travel Management strategy in the Revised Forest Plan. See discussion of ATM Program Strategy- the LTBMU developed a Water Quality Risk Analysis Process in 1998 as part of the Access and Travel Management Plan (ATM), and has been continuously evaluating roads for potential to adversely affect water quality. Approximately 180 miles of roads have received BMP upgrades in addition to the 106 miles of roads that have been decommissioned to protect water quality. Roads have been relocated away from surface water and riparian zones. In addition, through monitoring and evaluation BMPs have been modernized to increase maintenance frequency and improve effectiveness. By increasing the maintenance frequency the road system costs less to maintain and receives a water quality benefit from reduced sedimentation from reduced disturbance. The BMPs themselves have evolved to create a road system that mimics natural hydrology patterns by reducing stormwater concentration and maximizes natural drainage within the landscape.

Effects of trail construction and use on natural resources are analyzed in Chapter 3 of the FEIS. While mountain bike use results in some degradation of resources and affects some wildlife species, the consequences are not serious enough to warrant banning this popular activity.

PC 468: The Forest Service should clearly state the miles of roads and trails that will be added under each alternative.

Response: None of the alternatives propose building any new roads; increases shown in FEIS Table 2-1 reflect existing gated roads that could be opened to public use. Approximately 30 miles of hiking/equestrian trails and approximately 10 miles of mechanized trails would be added to the trail system. Of this, approximately 30 of those miles would come from currently unauthorized trails that would be upgraded and added to the system. No additional miles of OHV trails would be added.

PC 7: The Forest Service should maintain open status of areas currently open to mechanized recreation.

PC 23: The Forest Service should add more detail to EIS on effects to mountain biking and OSV use.

Response: Effects to mountain biking and OSV will vary by alternative. Alternatives A, B, and E would provide the maximum opportunities for mountain biking and OSV and would maintain currently open areas. Alternatives C and D would reduce opportunities should Congress choose to designate Wilderness.

PC 362: The Forest Service should increase the roads, trails and areas open to motorized use.

PC 479: The Forest Service should increase roads and trails.

Response: Alternative D would open the most roads to motorized use; Alternative C would open the most trails to motorized use. Alternative D would provide the least amount of trails for motorized use. Alternatives A, B, and E maintain existing levels of motorized road and trail use.

All alternatives propose adoption and improvement to standards of up to 30 miles of non-motorized trails. No programmatic expansion of the road system is proposed in any alternative; the LTBMU has decommissioned many miles of roads to address water quality concerns and there is no identified need to expand the road system. The Forest Service may consider changes to the road and trail system in future project-specific decisions.

PC 469: The Forest Service should disclose how additional roads and trails will be managed to meet TMDL targets.

Sample Comments: "*Is the management (including implementation and maintenance of BMPs and/or design measures) and de-commissioning or obliteration of such roads considered a part of the ATM program? If so, this should be explicitly stated and sufficient program resources should be allocated to achieve the Total Maximum Daily Load (TMDL) and Land Management Plan (Forest Plan) objectives…"*

"…the discussion in Sec. 3.4.1.3, Environmental Consequences of Vegetation & Fuels Management (p. 3- 20) does not adequately address the potential impacts of new, expanded and more intensively used roads as a result of fuels reduction projects, particularly under Alternative C which includes a greater emphasis on mechanical thinning."

Response: The USFS will continue to utilize best management practices related to road and trails, as defined in the USFS National and Regional Water Quality Management Handbooks (cite the new handbooks here) to ensure progress towards achieving TMDL targets for Upland Sources is achieved. This includes BMPs appropriate for existing road/trails, new road and trails, and decommissioning/obliterating roads and trails. The USFS will report accomplishments through the Upland TMDL tracking and reporting program, when development of the program is completed, and implementation is initiated by the TMDL regulatory agencies (NDEP, LRWQCB, and TRPA.

Environmental consequences of roads are discussed in the water quality, soils, and wildlife sections of the FEIS (3.4.24, 3.4.22 and 3.4.23).

PC 391: The Forest Service should designate some trails for hiking only or hiking and horses only.

Response: While our policy is generally to provide multiple use trails, Wilderness Areas and the Pacific Crest Trail provide non-motorized and non-mechanized trail opportunities (hikers and horses only). Alternatives C and D would increase those opportunities, while Alternatives A, B, and E would maintain the current opportunities.

PC 393: The Forest Service should consider innovative trail system designs such as a "hub and spoke" system to connect popular areas, and stacked loops.

Sample Comments: *"It would be nice to see additional multi-use trail connections from population centers with access points into the forests. A recent example is the Van Sickle Trail which now connects the population base of Stateline and South Lake Tahoe up to the Rim Trail. Additionally I would like to see more single track trails replace old vehicular roads that are no longer being used such as the Star Lake Connector Trail built in 2011."*

Response: These practices have been and will continue to be implemented during project planning under all of the alternatives, but are beyond the scope of this analysis.

PC 3: The Forest Service should expand trails and improve trailheads.

PC 412: The Forest Service should commit more resources to bicycle recreation.

PC 397: The Forest Service should consider the growth of mountain biking in the past 3 decades and the status of Tahoe as an international destination.

PC 406: The Forest Service should engage in a comprehensive non-motorized trail planning effort.

Response: Over generations the LTBMU has collaborated with many trail users to establish the current trail system. Among those user groups are the Pacific Crest Trail Association, Tahoe Rim Trail Association, International Mountain Bike Association, Tahoe Area Mountain Bike Association, League to Save Lake Tahoe, Tahoe Area Sierra Club, Back Country Horsemen, and the Blue Ribbon Coalition. The emergent trail system provides for recreation opportunities that reflect the demographics of the user groups in the Tahoe region.

Since 1998 the Lake Tahoe Restoration Act has provided a conduit for which funding (SNPLMA since 2004) has been awarded to improve the trail system. The result has been the adoption or decommissioning of unauthorized trails and the establishment of a whole trail system planned to compliment the natural environment, minimize trail maintenance needs, and meet public recreation needs. Future developments to the shared use trail system will follow the strategies in the Revised Forest Plan.

PC 396: The Forest Service should allow an all dirt mountain bike trail that circumnavigates the Lake.

Response: Such a proposal would require a large site-specific planning effort, but could potentially be implemented in the future.

Mountain bike use is compatible in most management areas on NFS lands except within wilderness areas and in certain natural areas such as the Pacific Crest Trail.

PC 394: The Forest Service should designate some trails for human-powered activities only (no equestrian use).

Response: The Forest Service is a multiple use agency and has a policy of managing for multiple uses on trails.

PC 32: The Forest Service should prescribe management direction for the PCT that will ensure management meets the requirements of the National Trails System Act and other relevant direction.

Response: Specific standards and guidelines have been included in the plan to ensure that the PCT is managed to meet requirements of the National Trails System Act.

PC 310: The Forest Service should limit use of mountain bikes and off road vehicles to minimize environmental damage.

Response: Motor Vehicles are limited to the routes shown in the LTBMU Motor Vehicle Use Map 2010. Mountain bikes are limited to areas outside of wilderness and are not allowed on the Pacific Crest Trail.

PC 354: The Forest Service should recognize the need to regulate ORV use to prevent damage to natural resources and historic sites.

Response: ORV use is regulated by 36 CFR subpart B sections 212.50 through 212.57, which is enforced through the LTBMU Motor Vehicle Use Map, 2010 (MVUM). Subpart B requires the establishment of the MVUM which contrary to the former regulatory framework established a "closed unless designated open" rule for motorized use. The updated regulations restrict motorized users to designated trails, roads, and open areas providing protection of resources.

PC 356: The Forest Service should decrease the roads and trails available for ORV use.

PC 372: The Forest Service should not provide any additional motorized trails or roads.

PC 378: The Forest Service should not increase areas open to motorized off road vehicles.

PC 379: The Forest Service should ban OHV use in the Basin.

Response: While we recognize that some people prefer not to share trails with motorized vehicles, OHV use is recognized as a valid recreational use. Off Highway Vehicle (OHV) use is limited to routes and areas shown on the LTBMU Motor Vehicle Use Map (2010). OHV use off designated roads or trails is prohibited. OHV use is managed and the routes are maintained to protect natural resources. The miles of available routes vary by alternatives, as described in Chapter 2 and Table 2-1 of the FEIS.

PC 377: The Forest Service should eliminate unneeded roads.

PC 400: The Forest Service should do more road to trail conversions.

Response: The LTBMU Travel Analysis Process confirmed that the ATM process has identified the minimum road system necessary to manage the forest. In future project specific analysis roads identified would be considered for elimination or conversion to trails. Since 1998, the LTBMU has identified and eliminated 108 miles of unneeded roads and few unneeded roads exist.

PC 425: The Forest Service should avoid building roads in IRAs.

Response: The final rule of 36 CFR Part 294 prohibits road building within IRAs.

PC 478: The Forest Service should not reconstruct roads to accommodate passenger vehicles.

PC 514: The Forest Service should not convert OHV roads for use by passenger vehicles.

Response: Roads are managed and maintained to provide for access for recreation and management. An increase in roads open to passenger vehicles is proposed in Alternative C, recognizing that many visitors come to Lake Tahoe in passenger vehicles and this is their preferred means of accessing the National Forest, either by choice or because of physical limitations. Alternative D would decrease the mileage, while Alternatives A, B, and E would maintain existing levels of passenger vehicle roads.

PC 2: The Forest Service should expand road system.

Response: LTBMU Travel Analysis 2011 identifies the needed road system for management and recreation access to the forest. Any expansion would be done at the project level and not through this Forest Plan Revision.

PC 477: The Forest Service should clarify their road maintenance strategies.

Response: Road maintenance strategies are described in FSH 7709.59 Road System Operation and Maintenance Handbook.

It is necessary to perform condition surveys and maintain approximately 20% of the road system per year to keep the road system in a condition that is protective of water quality and open for administrative and in many cases public access. The consequences of accumulating deferred maintenance upon the road system is that road may not be available for other projects such as fuel reduction and ecologic restoration. Strategies in the Forest Plan include managing the road system to achieve environmental goals and prioritize maintenance of the road system relative to public benefit and ability to eliminate deferred maintenance.

Parking

PC 4: The Forest Service should expand parking.

PC 138: The Forest Service should maintain current parking areas.

PC 473: The Forest Service should evaluate how much parking is needed and the size of parking areas.

Response: Expanded parking is evaluated in Alternative C, and small increases in parking are included in Alternatives B and E. The demand for increased parking access must be considered in the light of construction and maintenance costs and potential impacts to the natural setting. The Forest Service will conduct project specific analysis to determine parking needs prior to implementing changes.

PC 36: The Forest Service should improve winter parking.

Response: Development of winter parking is identified in the strategies of the Revised Forest Plan. There are many areas that are not accessible even after snow removal has been completed. Many county snow removal and winter parking ordinances do not allow for roadside parking when snow is present, which has limited many winter dispersed recreation opportunities such as backcountry skiing, snowshoeing, and snowmobiling.

PC 509: The Forest Service should continue to allow unmanaged parking.

Response: All alternatives would allow for unmanaged parking to continue in areas where use is compatible with the setting. The intent of shifting to managed parking is to address impacts in areas that receive heavy use.

PC 467: The Forest Service should wait until transit is improved before decreasing parking.

Response: During project specific planning the Forest Service would define how to maintain access to the forest prior to eliminating parking, not as a part of this Forest Plan Revision.

PC 337: The Forest Service should provide more access points (trailheads) to spread out people and impacts.

Response: Trailheads would stay relatively the same under alternatives A, B, and E, increase in C and decrease in D.

PC 466: The Forest Service should centralize parking and implement a shuttle system to access recreation sites.

Response: The use of transit is promoted in all alternatives. Transit requires the balance of convenience and cost of transit to be more favorable than the private automobile for it to become efficient and effective. Even in the best scenarios transit does not function without subsidies. Ridership for transit may be increased with incentives to use transit and disincentives to use the private automobile. Examples that could be expanded at Lake Tahoe include fee parking (which is often used to subsidize transit), combined entrance/transit fees, timely service, sheltered transit stops, decreased parking, and connected trail systems. Additional transit service must be strategically implemented along with monitoring. Goals for transit include reduce congestion, improve safety, reduce roadside parking, and meet ridership goals.

Use of centralized parking and transit may be feasible at developed recreation sites where demand for access is great and needs for private automobile are low. For example, centralized parking and transit has proven to be very effective within the urban core to access ski resorts on NFS lands. In any event, transit and parking are interrelated and both must be considered when planning for access to developed recreation sites.

PC 470: The Forest Service should explain how unmanaged roadside parking would be eliminated and controlled.

Response: Management for roadside parking would vary depending upon the area and jurisdiction. Roadside parking along highways is generally the jurisdiction of the department of transportation managing the roadway. Along forest roads the jurisdiction is the LTBMU. Strategies for management of roadside parking would be defined in project level analysis. See response to PC 138 for comparison of relative amounts of parking by alternative.

PC 407: The Forest Service should provide public transit at trailheads.

Response: All alternatives would allow for transit opportunities to develop in partnership with other agencies.

Air Quality

PC 194: The Forest Service should address the contributions of OSV use to greenhouse gases.

PC 351: The Forest Service should consider the average pollutant load contributed by OSVs.

Response: The FEIS Air Quality section (3.4.2) has been updated to include an analysis of the effects of OSV use to air quality.

PC 196: The Forest Service should improve the air quality analysis.

Sample Comments: *"Given the nature of the comparison, it is appropriate to use identical units in the figures. However, the draft EIS uses tons x 10,000 for the vertical axis on two figures and tons x 1,000 on one figure."*

Response: Figure 3-21 uses tons x 1,000 because at the scale of tons x 10,000 it would be impossible to show the difference between the alternatives.

PC 485: The Forest Service should include measures to reduce or control emissions.

Response: The Forest Service has incorporated numerous measures to reduce emissions, including purchasing hybrid vehicles and requiring special use permittees to use 4-stroke engines on snowmobiles. These measures, however, are outside of the scope of this Forest Plan Revision.

Aquatic Wildlife Habitat and Species

PC 56: The Forest Service should expand Lahontan cutthroat trout populations in Lake Tahoe and its tributaries as described in both the USFWS 2003 Short Term Action Plan and 1995 Recovery Plan.

Response: All alternatives support recovery efforts for Lahontan cutthroat trout (LCT) as directed by the Endangered Species Act. Specifically all alternatives support the continued recovery efforts in the headwaters of the Upper Truckee River (10 miles), Fallen Leaf Lake, and initiate recovery of an additional two subpopulations (see LCT objectives in the Revised Forest Plan).

The Lahontan Cutthroat Trout Recovery Plan (1995) identified the Western Lahontan Basin (comprised of the Truckee, Walker, and Carson River basins) as one of three distinct population segments (DPS) of LCT. Several of the lacustrine populations within the Western DPS (Lake Tahoe, Pyramid Lake, Independence Lake, and Walker Lake) were identified by the LCT Recovery Plan as potentially important to the recovery of the species. In 1999, Recovery Implementation Teams (RIT) for the Truckee and Walker River basins were formed to develop action plans (as identified in the Recovery Plan) to establish recovery implementation strategies for LCT. These teams, comprised of representatives from Tribal, Federal, and State agencies, completed their action plans in 2003. In their respective basins, the action plans identified conservation and restoration measures to further LCT recovery while improving recreational fishing opportunities for this native trout. Although a Tahoe Basin RIT was not formed at the same time as the other RIT teams, recent planning efforts conducted within the Tahoe basin (Pathway 2007) have shown an enhanced public interest in the restoration of native species. A Tahoe Basin RIT was needed for the development and implementation of this process.

In April 2007, the Tahoe Basin Recovery Implementation Team (TBRIT) formed as part of the ongoing restoration efforts and in response to the growing interest for native species restoration. The TBRIT is comprised of representatives from the U.S. Forest Service-LTBMU, Tahoe Regional Planning Agency, U.S. Fish and Wildlife Service, California Tahoe Conservancy, Nevada Department of Wildlife, Washoe Tribe, and California Department of Fish and Wildlife. This team is developing an action plan to identify opportunities to recover and restore lacustrine LCT populations within the basin based on the most complete biological, geographical, and hydrological information available for the Tahoe basin. The action plan will assist team members in identifying and prioritizing actions for recovery of LCT as well as determining the role of LCT in the management of the recreational fisheries in the basin. Additionally, the action plan will describe a long-term strategy for LCT recovery and fishery restoration.

PC 277: The Forest Service should prevent introduction of new AIS.

PC 140: The Forest Service should use education, monitoring, and incentives to help control aquatic invasive species.

The Forest Service is a member of the Lake Tahoe Aquatic Invasive Coordination Committee and participates on AIS Working Groups for aquatic weeds, non-motorized boat control/prevention, and warm water fish. The LTBMU has one of the strongest and most comprehensive AIS programs in Region 5 (and possibly in the nation) and we are working with the many partner agencies and public groups to control, prevent, and treat AIS. Additionally, specific management direction that is compatible with the goals of the coordinated effort mentioned above is incorporated into the Revised Forest Plan in the form of Desired Conditions, Strategies, and Standard and Guidelines.

Alternative A only includes strategies for management of terrestrial invasive plant species. Alternatives B, C, D, and E include strategies to prevent new infestations and collaborative strategies to control or eradicate known populations. Alternative D differs in that it only includes strategies that limit management of AIS to high priority species.

Alternatives B and C put forth a revised set of desired conditions, objectives, and Standards and Guidelines that are based on current biological resource needs and anticipated future needs. These Alternatives set a framework for AIS management (prevention, control, eradication and interagency collaboration) to guard against wide spread ecological, social and economic impacts.

The purpose of the Lake Tahoe Region AIS Management Plan (where USFS is a partner) is to facilitate coordination of regional, state, and federal programs and to prioritize and guide implementation of AIS prevention, monitoring, control, education, and research actions in the Lake Tahoe region. This plan is helping to coordinate and set timelines for actions to preserve and protect the environmental, economic and human health in the Lake Tahoe Region.

PC 199: Aquatic and terrestrial invasive species should be aggressively exterminated. All boats should be checked.

Response: Mandatory watercraft inspections are in place to stop aquatic invasive species, such as quagga mussels, before they enter the water. All boats, including brand new boats are required to have an inspection prior to launching into Lake Tahoe, Fallen Leaf Lake or Echo Lake. The USFS and AIS partners recognize that watercrafts are the largest source for spreading AIS into new waterways. Inspections are an essential part of preventing this inadvertent transport of alien species into the pristine waters of Lake Tahoe.

PC 209: The Forest Service should collaborate with other entities on invasive species management.

Response: The Forest Service is a member of the Lake Tahoe Aquatic Invasive Coordination Committee and participates on AIS Working Groups for aquatic weeds, non-motorized boat control/prevention, and warm water fish. The LTBMU has one of the strongest and most comprehensive AIS programs in Region 5 (maybe in the Nation) and we are working with the many partner agencies and public groups to control, prevent, and treat AIS.

The Forest Service also cooperates with the multi-agency Lake Tahoe Basin Weed Coordinating Group Program. Strategies include prioritizing invasive plant species and infestations, placing highest priority on new species and new, small infestations. Risk to NFS resources and feasibility of control are among the prioritization factors. Priorities are then reassessed based on new information.

Additionally, specific management direction that is compatible with the goals of the coordinated efforts mentioned above is incorporated into the Revised Forest Plan in the form of Desired Conditions, Strategies, and Standard and Guidelines.

PC 236: The Forest Service should consider conflicts between humans and animals.

Sample Comment: "ALL of the wildlife in the Tahoe basin will be adversely affected leading to ever-increasing human-animal conflicts, already a problem! I feel this is perhaps one of the most important considerations of all"

Response: We recognize that conflicts between humans and animals are inevitable. We have included specific management direction for some species, including bears and Threatened, Endangered, Sensitive, Candidate, and Proposed species. In addition, we have included management direction to protect, enhance, and restore all habitat types.

PC 301: The Forest Service should allow beavers to maintain their dams and not remove them.

Response: The USFS manages habitat rather than species. The USFS, however, generally does not manage beaver dams. The USFS considers the presence of beavers a part of the natural environment. Although their presence is somewhat controversial, pending location, in most cases they create habitat that is beneficial to riparian and aquatic species and aid in trapping downstream movement of sediment and nutrients. However, in some cases, dam locations are causing a threat to natural resources or structures. In these situations, some type of management action is required, which sometimes entails the removal of the dam. Prior to removal, all options are considered, including but not limited to, installing flow devices to alleviate flooding and/or wrapping vegetation.

PC 147: The Forest Service should protect habitat values in riparian areas and should not allow recreationists to degrade them.

Response: The USFS manages land for multiple uses and also has the obligation of protecting the NFS lands for future generation. The USFS also recognizes that part of the recreational experience is the enjoyment of the unique natural environment, and the Revised Forest Plan includes management direction specific to protection of riparian habitats.

Botany

PC 438: The Forest Service should require, not just encourage the use of certified weed-free hay and straw.

Response: Use of certified weed-free hay and straw has been addressed in the FEIS and Forest Plan. The DEIS guideline was developed when neither CA nor NV had weed-free certification programs. Now both have programs, so the guideline has been changed to reflect phasing in of state certification programs.

PC 439: If the Forest Service plans to use herbicides to control vegetation in early seral habitat, we should say so and should analyze effects.

Response: The Forest Service has analyzed the effects of herbicide use in a programmatic EA; this decision will remain in place under the new Plan and herbicide use will be consistent with the EA decision. The LTBMU will continue to use an integrated invasive species management approach that evaluates all available control methods, including biological, cultural, mechanical/physical, and chemical techniques, as well as addresses potential adverse effects to native species, human health, ecosystem processes, or other NFS resources. The effects of site-specific treatment methods would be conducted as part of the project planning process.

PC 330: The Forest Service should evaluate motorized vehicle use, including snowmobiles, in areas known to have plants and animals that are threatened or listed species such as Lahontan cutthroat trout, pine marten, pika, and white bark pine.

Response: The effects of OHV use on listed plants are addressed in the FEIS. OHV use is restricted to an established trail system and is unlikely to further degrade these habitats. OSV are unlikely to affect listed plants because occurrences are covered by snow during use season. Specific to whitebark pine, in its 12-month finding on whitebark pine, USFWS did not consider OSV use to be a threat contributing to considerations for listing under ESA. OSVs are not likely to affect whitebark pine directly or indirectly: a) individuals are not likely to be trampled or damaged to the point of affecting reproduction; b) habitat is not likely to be degraded as it is covered by snow during use season and OSV use is not allowed during season of seedling establishment.

PC 426: The Forest Service should clarify Plan direction for whitebark pine and species refuge areas in general.

Response: The direction for whitebark pine has been addressed in FEIS. We have added whitebark pine specific desired conditions, objectives, and design criteria. The resource overlay section in Part 2 of the Plan now includes more details about Species Refuge Areas. These areas are intended to identify the best and/or critical habitat for identified special status species. Species Refuge Area maps (FEIS Maps 11, 13 and 14) will be continuously updated as habitat identification changes. For example, new spotted owl and goshawk PACs were added between the DEIS and FEIS and are reflected on the FEIS map (number 11).

Climate Change

PC 40: Creating resiliency should be the highest management priority due to adverse effects of extended periods of higher than normal temperatures.

Response: The Forest Plan Introduction states: "Natural resource management on the LTBMU is focused on restoring watershed and forest health and resiliency, fire and fuels management, providing ecosystem conditions that support native plant and animal communities, and protecting special status plant and animal species."

The Planning for Sustainability section has been updated to further explain adaptation that will lead to resilience in the face of a changing climate: "Ecosystems will be managed for resiliency to prepare for uncertain future outcomes with approaches that support adaptation to changing future conditions." The Plan recognizes that: "Adaptation strategies increase the resilience of ecosystems and resources to climate change impacts."

The Plan is not hierarchal in nature – management actions are not prioritized, however resiliency is a theme throughout the Plan: *Hydrologic and Geomorphic Processes section* focuses on watershed resilience; *forest vegetation, fuels, and fire management* focuses on forest resilience to fire addressed through desired conditions and strategies: "Vegetation management activities adhere to ecologically-based management strategies and are integrated, ultimately to restore or maintain forest resiliency. For example, forest vegetation treatments around communities (thinning that alters density, structure, and species composition) to restore forest resilience to wildfire also meet the goals of reducing forest stand susceptibility to bark beetle-caused tree

mortality."; *Forest Vegetation and Fuels management objectives* recognize that "The amounts of acres by treatment and forest type represent the first small steps in a long-term process aimed at achieving forest restoration goals. Given the focus of current program of work in the WUI, objectives related to these treatments will generally occur in the first 10 years of plan implementation and treatments related to restoring forest type structure, composition, and resiliency will occur in the latter 10 years of plan implementation." *Aquatic habitat strategy*: "Use historical sedimentation regimes as a guide for ecosystem resiliency and/or vulnerability."

In addition, the FEIS analyzes adaptation actions related to resiliency in Section 3.4.7 – Climate Change.

PC 48: The Plan should include more adaptive management strategies for climate change. The Plan should emphasize the full adaptive management cycle by acting on the results of monitoring.

PC 108: The Forest Service should fully integrate climate concerns in the adaptive management framework, with explicit performance measures.

Response: Appendix A of the FEIS is the Monitoring and Evaluation Plan. The objective of the monitoring is to act on the results of the monitoring: "Periodic evaluations summarizing the monitoring results will be reviewed by the Forest Supervisor and other managers to determine if any changes are needed in management actions or plan guidance. This monitoring plan is intended to inform resource management on the unit, by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving or maintaining desired conditions or objectives."

Measurements of the desired conditions are an indirect measure for our management strategies for climate change. We are managing for climate change currently with 6 adaptation or mitigation management strategies, which were included in the FEIS and have been added into the Plan as well under Planning for Sustainability. Our Forest Plan monitoring plan has monitoring associated with desired conditions linked to each of these 6 management strategies (See FEIS Section 3.4.7 – Climate Change for effects to each of these strategies): (1) building adaptive capacity of ecosystems through ecological restoration, (2) enhancing watershed health, (3) sequestering forest carbon, (4) reducing existing stresses, (5) sustainable operations, and (6) fostering science-management partnerships and public education, thus allowing adaptive management. In addition, two of the monitoring measures in habitat and species diversity are specifically looking at changes in climate and the influence of those on wetland trends and one is specifically looking at changes in stream temperature. This combination of indirect and direct Forest Plan monitoring provides the LTBMU with the ability to manage adaptively for climate change.

In addition, the LTBMU will continue to manage for climate change based on national policies and guidance. The plan notes under the Planning for Sustainability section: "The Forest Service is developing national policy for addressing the uncertainties associated with management in the face of a changing climate. The LTBMU climate change assessment and strategy will be updated as additional guidance is provided by the agency."

The FEIS Section 3.4.7 – Climate Change has been updated to summarize the current framework that the Forest Service is following as an agency to address climate change. Specific to this comment, the FS CC scorecard is addressing:

- Identify critical research questions guiding adaptive management: Element 7 adaptation activities
- Prioritize Science Needs: Element 4 Science and Management and Element 5 External Partnerships
- Science-Management Partnerships: Element 4 Science and Management and Element 5 External Partnerships

PC 83: The Forest Service should use the term climate warming instead of climate change.

Response: Appendix D and section 3.4.7 of the FEIS discuss the expected climatic changes. These changes include more than just an increase in temperature and therefore the term climate change is more appropriate than climate warming.

PC 148: Analysis of the effects of global warming should be included in any resource management plans and should be included in assumptions in FEIS.

Response: The FEIS section 3.3 Assumptions Common to All Alternatives, includes assumption: "Climate Change –Assumptions regarding climate change are described in detail in Appendix D – Climate Change." Future resource management plans incorporation of climate change assumptions will be based on regional and national direction/guidance.

PC 149: The Forest Service should specify that climate change is not wholly natural.

Response: Language was changed in the FEIS (Section 3.4.7 – Climate Change (Reducing Existing Stresses) to "climate change" rather than "natural climatic variability." It is outside of the scope of this document to identify why climate change is occurring, however section 3.4.7 does recognize that "Healthy forests are directly linked to sustainable consumption," and that the Forest Service is focused on reducing its environmental footprint.

PC 153: The Forest Service should analyze the effects of multiple climate change scenarios.

Response: The Forest Service analyzed the effects of multiple climate change scenarios and presents these in Appendix D (Volume III) of the FEIS. Section D3 in Appendix D under future predictions summarizes two Global Climate Models x 2 emission scenarios for statewide models, and the local models summarized are based on 2 emission scenarios (IPCC A2 and B1).

PC 151: The Forest Service should conduct its own Forest-level vulnerability assessment for the Tahoe Basin and use it to prescribe management to mitigate effects of climate change.

PC 152: The Forest Service should analyze the effects of climate change on species, including inter-species interactions, and should prescribe adaptation strategies to mitigate potential effects.

PC 156: The Forest Service should follow up vulnerability assessments with analysis of key vulnerabilities for specific species and habitats and recommend a course of action.

Response: The FEIS Section 3.4.7 – Climate Change has been updated to summarize the current framework that the Forest Service is following as an agency to address climate change.

The LTBMU is currently following national and regional guidelines related to climate change vulnerability assessments. Element 6 of the National Forest Service Climate Change Scorecard is: Assessing Vulnerability (http://www.fs.fed.us/climatechange/advisor/scorecard/scorecard-guidance-08-2011.pdf). Currently assessments are being conducted at the regional level. The regional office is working with partners to conduct a vulnerability assessment and develop an adaptation strategy for NFS lands in the Sierra Nevada Range of California. The Climate Adaptation Project is being led by EcoAdapt. The goal of the Climate Adaptation Project for the Sierra Nevada is to develop a large-scale vulnerability assessment and associated adaptation strategies for focal resources of the Sierra Nevada. The primary objectives of the project are: (1) assess the vulnerability of a suite of focal resources to climate change; (2) use spatial analysis and expert input to prioritize conservation areas and/or actions; and (3) identify implementable management responses to climate change in the Sierra Nevada. Once this information becomes available it will be incorporated into LTBMU management. While the LTBMU will not be conducting individual vulnerability assessments at this time, we do understand the vulnerability of some of the local resources based on the EIP program, which had public involvement, and the Sierra Nevada Framework.

We have added climate change strategies to the Revised Forest Plan that identify how vulnerability assessments will be incorporated into management:

- A vulnerability assessment will be completed at the Regional Level for the Sierra Nevada. The LTBMU will collaborate on local and regional vulnerability assessments.
- Vulnerability assessments related to climate change will be incorporated into management on the LTBMU as information is synthesized. Adaptation activities recommended for vulnerable resources will be considered and prioritized based on funding.
- Consider restoration of species and/or habitat identified as vulnerable to climate change during project planning.
- Species restoration should be considered during habitat restoration, especially for vulnerable resources.

PC 197: The Forest Service should include more than two strategies for responding to climate change.

- ***Response:*** *We have added climate change strategies to the Revised Forest Plan that identify how new information related to climate change will be incorporated into management:*
  - Collaborate on local and regional vulnerability assessments. Participate in a Regional vulnerability assessment for the Sierra Nevada.
  - Incorporate vulnerability assessments related to climate change into management on the LTBMU as information is synthesized. Consider and prioritize adaptation activities recommended for vulnerable resources based on funding.
  - Consider restoration of species and/or habitat identified as vulnerable to climate change during project planning.

- Consider restoration of individual species during habitat restoration, especially for vulnerable resources.
- Minimize management impacts to species that are vulnerable to climate change. Reduce stress (e.g. human activities, invasive species) related to management in order to reduce the additive effects of non-climate stress.
- Incorporate adaptation actions into management to increase resiliency and adaptive capacity of vulnerable resources.

PC 267: The Forest Service should address global biodiversity loss.

Response: We cannot address global biodiversity loss at the Forest level; however we can and do address local biodiversity. Currently we have holistic approach to managing for diversity, with a focus on management of TESPC species. The protective measures we have proposed (through desired conditions and strategies) are "intended to contribute towards the conservation of our species" (which would mean biodiversity at the Plan level):

- Desired Conditions specifically mention diversity: Hydrologic and geomorphic processes: habitat diversity); Forest Vegetation, Fuels, and Fire Management: (diversity understory; Jeffrey pine), (diversity in Aspen), (plant and animal diversity aspen), (veg diversity); and (species diversity meadows)
- In addition to the DC that specifically calls out diversity, there are many DCs in Habitat and Species Diversity which all move towards managing for biodiversity and multiple strategies found in Conservation of Habitat and Species Diversity. There are 4 strategies specific to diversity: Identify and map areas of high biological diversity, where multiple biological resources occur in the same habitat (e.g. a sensitive fish, TRPA special interest plant, and target wildlife species occur all within 200 meters of each other); Consider all levels of food web (trophic level) biodiversity (example predator/prey) during project planning and design to help mitigate climate change exposure to individual species and communities (e.g. from changes in phenology and habitat shifts); Promote actions that increase meadow wetness and diversity of native wetland species (i.e. obligate, facultative-wet); Maintain, enhance, and/or restore terrestrial habitats to increase the diversity, abundance, and distribution of species and biological communities.
- All management area concepts specifically mention diversity: **Wilderness Management Area:** These areas help sustain ecosystem function and species diversity by serving as habitat for fauna and flora and providing wildlife corridors; **Backcountry Management Area:** Backcountry areas contribute to ecosystem and species diversity and sustainability, serve as habitat for fauna and flora, and offer wildlife corridors. These areas provide a diversity of terrestrial and aquatic habitats, and support species dependent on large, undisturbed areas of land; **General Conservation Management Area:** These areas contribute to ecosystem and species diversity and sustainability; serve as habitat for fauna and flora; and offer wildlife corridors; **Transition:** These areas contribute to ecosystem and species diversity; physical and biological resource conditions are managed carefully due to the high level of use and close proximity to highly developed lands.

- One standard and guide in Conservation of Species and Habitat specifically mentions diversity of plant and animal communities on project specific basis (guideline)

PC 154: The Forest Service should analyze the effects of climate change on individual species.

Response: Currently the FEIS has general sections for wildlife, aquatic, and plant species on climate change impacts that acknowledge our uncertainties. In addition there is mention that climate change may impact the following species specifically: Pacific fisher, northern goshawk, great gray owl, CA spotted owl, Sierra NV red fox, Pacific marten, CA wolverine, Yosemite toad, Tui chub, Great Basin rams-horn, northern leopard frog, Lahontan cut-throat trout, Sierra Nevada yellow-legged frog, Whitebark pine, long-petaled Lewisia, and veined water lichen. In addition, specific language related to climate change was added for Tahoe Draba and Cup Lake Draba into the FEIS.

PC 155: The Forest Service should analyze effects of climate change on evolutionary response of individual species.

Response: This is outside the scope of this project. There is very little information on the evolutionary response of individual species related to climate change. The Plan and FEIS focus on adaptively managing for species diversity and habitat. Monitoring activities outlined in Appendix A (Volume III) will help provide information on the status and trend of these species. Evolutionary response may be conducted by researchers at universities if there is an identified need.

PC 198: The Forest Service should evaluate the impacts of the entire range of human activities, and identify actions that would reduce the impacts and thus partially mitigate increased stress due to climate change.

Response: The potential effects of climate change are discussed in multiple sections throughout the FEIS. The FEIS recognizes that the high visitation rate (5.7 million visitor per year) has the potential to increase stress on natural systems. The Plan balances natural resource protection with multiple uses. It is worth noting that the majority of the use and management activity takes place in the General Forest management area, which constitutes 43% of LTBMU lands in Preferred Alternative E. Human stressors are considerably less in the Backcountry and Wilderness management areas, which comprise 48% of LTBMU lands. Santini-Burton/Urban Forest Parcels comprise the remaining 9% and have mixed uses, but are managed to protect the values for which they were acquired.

PC 482: The Forest Service should implement a comprehensive climate change strategy to preserve the Basin and begin to address the worldwide climate change crisis.

PC 483: Forest Plan should address climate change by preparing the Forest to respond to changing conditions in weather, landscape and budget while working towards desired conditions.

Response: The list of relevant handbooks/guidelines related to climate change and the Forest Service's strategy to addressing climate change has been added to the other sources of information section in the FS Plan. There is currently minimal guidance on how to address climate change in NEPA documents. Existing guidance has been summarized in the FEIS Section 3.4.7 – Climate Change.

PC 271: The Forest Service should evaluate potential for changed flow regimes as a result of climate change to create barriers to aquatic species movement (include evaluation of the effect of dams, diversions, conveyances, and culverts) on aquatic connectivity.

Response: Section 3.4.3 – Aquatic Wildlife of the FEIS discusses the potential for changed flow regimes and potential impacts on aquatic species in the climate section.

The LTBMU has completed an aquatic organism passage (AOP) survey of all NFS roads in the LTBMU. The LTBMU is currently in the process of prioritizing management of identified connectivity barriers and development of a monitoring plan which will assess the effectiveness of management activities and revisit a set of passages on a regular basis to monitor their effectiveness over time. While the AOP survey focuses on fish passage issues, the outcome is to identify opportunities to expand migration opportunities for native aquatic organisms including deep water habitat, pool and lakes, as climate change impacts stream flow and temperature.

PC 150: The Forest Service should not use climate change to justify extensive forest treatment that could be harmful.

Response: Climate change is not used to "justify" more aggressive or extensive forest treatments, but is one of a number of factors considered in proposed forest treatments. Desired Condition 22 in the Revised Forest Plan states in part, "Disturbance processes and/or their surrogates create and maintain forest conditions that are well-adapted to current and future climates."

Vegetation treatments are based on the specific desired conditions identified for each vegetation type that were developed based on pre-Comstock conditions, which are being used as a guide for the natural range of variability (Revised Forest Plan Table 1. Modeled Pre-Settlement Historical Reference and Current Conditions). These desired conditions may be met through natural fire, restoration, or fuels thinning as identified in the standards and guidelines for forest vegetation, and fire and fuels sections in the Forest Plan. Many of the current stand densities are too dense to allow for prescribed or wildfire, therefore thinning followed by prescribed burning are a management option to meet desired conditions, while minimizing impacts to resources. As information is gathered through monitoring and research on the effectiveness of current management actions, an adaptive management strategy may be developed to address more effective management actions that could meet the DCs under a different set of climate conditions.

Cultural Resources

PC 20: The Forest Service should identify National Register sites and Heritage priority Assets in the Forest Plan.

Response: The Forest Plan provides a broad description of resources that occur on the basin without specific information that might compromise the confidentiality of the over 150 resources that would comprise the list requested. Several Federal Regulations and agreements require the FS to maintain confidentiality of cultural resources. Sites actively managed by the LTBMU are advertised in various LTBMU or partners' publications.

PC 21: The Forest Service should actively manage and protect National Register Sites and Heritage Priority Assets.

Response: Cultural Resources Desired Conditions 1 and 2 provide for proactive management of all cultural resources determined eligible or whose eligibility has not been determined. These Desired Conditions are consistent with all alternatives.

Tribal Relations

PC 464: The Forest Service should ensure that Special Forest Products and Forest Botanical Products regulations will be recognized in the updated forest plan for tribal/cultural uses.

Response: *36 CFR 223 Subpart G – Special Forest Products, 36 CFR 223 Subpart H – Forest Botanical Products* and other applicable regulations will be added to the Tribal Relations, Standards and Guidelines, Additional Information section of the Revised Forest Plan. This information is consistent among all alternatives.

Fire and Fuels

PC 496: The Forest Service should consider how their literature citations for fire/fuels are applied.

Sample Comment: *"The Draft Plan, Appendix D, claims that "all" scientific studies conclude that fire severity is increasing in forests of the Sierra Nevada management region, but doesn't mention Schwind (2008), Collins et al. (2009), Dillon et al. (2011), or Miller et al. (2012), which each include all of, or a portion of, the Sierra Nevada management region and all of which conclude that fire severity is not increasing."*

Response: The following paragraphs describe scientific papers and their relevancy to Forest Plan Revision:

--Schwind 2008—Examine the Pacific Northwest and Pacific Southwest combined area in their analysis, indicating an increasing trend toward a larger proportion of burned area coming from large fires. There is also a significant trend toward larger mean fire size. Acknowledges increase in high severity over the last decade but no significant overall trend. Combines ALL forest types into a single analysis, ranging from temperate rainforest in WA to Joshua Tree desert woodlands in SE CA. Carries out no statistical analysis whatsoever. Has since been updated with more recent reports that statistically show increased fire area.

--Collins et al. 2009--Illilouette Creek Basin is in Yosemite National Park, is largely unlogged, with over 30 years of managing natural ignitions for resource objectives. This paper describes how this management strategy leads to self-limiting fires that more resemble reference fire regimes (including severity) while acknowledging that fire severity is increasing in other parts of the Sierra Nevada where this management strategy has not been employed. This paper shows the importance of forest fuels in driving the higher fire severities on lands outside of YNP.

--Dillon et al. 2011--This paper does not even consider Sierra Nevada management region, it only looks at Pacific North West and South West; only includes a small portion of the northern

most portion of CA and none of the Sierra Nevada. Even so, Dillon's results support the results of Miller et al. 2009 in the Sierra Nevada, because the areas in Dillon's study most similar to the Sierra Nevada (SW US and southern Rockies) were the two regions they studied that also showed rises in fire severity and/or rises in the area of high severity fire.

--Miller et a.l 2012--No trend in severity in northwestern California. The authors state this is in contrast to Sierra Nevada where the fire severity proportions are increasing. Miller et al. (2009) analyzed all of the data that were available at the time of analysis. More recently, Miller and Safford (2012) repeated the analysis for yellow pine, mixed conifer and red fir forests (which are most of the Sierra Nevada), using imagery covering 98% of all fire area and extending the analysis by four years. They found the same trends as Miller et al. (2009).

Sample Comment: *"The DEIS's fire/fuels section relies upon the concept of fire regime interval departure (FRID) to derive "Condition Class" categories, and assumes that higher Condition Class categories will burn predominantly at higher-severity levels, and at higher proportions of high-severity effects than areas with lower Condition Class"*

Response: The Fire and Fuels report does not state fire severity increases with increases in FRID condition class. FRID simply measures the difference between time since last fire for a pixel on the landscape and the reference fire return interval of the presettlement fire regime of that pixel. The value is then categorized into one of the 3 condition classes. These are meant as metrics of the departure of current condition from that of the presettlement fire regime (see: http://www.fs.fed.us/rm/pubs/rmrs_gtr292/2011_vandewater.pdf). While inferences can be made related to fire severity for some forest types and time since fire (long FRI regimes are often high severity regimes), the Fire and Fuels report makes no such inferences in relation to FRID. Rather, the Fire and Fuels section discusses the application of prescribed fire and managed wildfire in reducing the well documented fire deficit that has occurred over the last century.

Sample Comment: *"Appendix D cherry picks, and fails to also cite the studies that predict no fire increase, or a fire decrease, in Sierra Nevada forests due to future climate change (Krawchuk et al. 2009 [Fig. 3], Gonzalez et al. 2010 [Fig. 3b], Liu et al. 2010 [Fig. 1]). Appendix D inaccurately cites McKenzie et al. (2004) for the proposition that fire will increase in California's forests in the future, when Figure 1 of that study projects a decrease in fire due to increasing summer precipitation."*

Response: *Krawchuk, Gonzalez, and Liu are all global trend scale analyses. The scales of these analyses make application to Forest or Regional scale difficult.*

However: --Krawchuk Fig. 3 classifies current low probability of fire increasing to high probability as invasion, and the opposite for retreat. No category for high probability increasing higher. Krawchuk also states that theirs is a conservative estimate. Their purpose is to develop a useful model. And they only use a single general circulation model (of many). Krawchuk's figures cover the entire globe and are such a scale as to render the location of the assessment area difficult. Even so, Fig. 2 shows pretty clearly that 5 of the 6 pictured scenarios project increased fire probability for the Sierra Nevada area. Also, the eastern edge of the Sierra Nevada area is a "fire invasion" area in Fig. 3, because it was historically dryland/desert vegetation that is seeing more fire due to cheatgrass invasion. This is immediately adjacent to the Lake Tahoe Basin on

the east. Areas left blank in Fig. 3 are either those with already high fire potential that continue high in the future, or areas with low fire potential that continue low in the future. The Sierra Nevada is in the former class. Not being mapped as a fire invasion area does not mean that future fire potential is not high!

--Gonzalez Fig. 3b projects changes in potential vegetation 1990-2100, without definitively disclosing the relationship to fire on those projected changes. Further, the results state "Temperate mixed forest, boreal conifer and tundra and alpine biomes show the highest vulnerability, often due to potential changes in wildfire". Quite to the contrary of the commenter's statement, Fig. 2c in Gonzalez refers to modeled change in fire, and after zooming into the figure (it is of the whole globe!!), one can see that southern and eastern California are dark brown, which is the highest value mapped for projected increase in fire frequency.

-- The Liu paper maps the KBDI (Keetch-Byram Drought Index) and does not actually directly map fire potential. Liu et al.'s results project increasing drought potential across most of the contiguous US, including eastern and southern California, contrary to the commenter's statement.

-- McKenzie et al. (2004) calculated correlations between mean summer temperature and precipitation and annual burned area for eleven western states between 1916 and 2002, and then employed regression models to project burned area into the future under two emissions/climate scenarios. They found strong relationships between their summertime climate variables and fire area for all states but California and Nevada, and concluded that most of the western US was likely to experience large increases in annual area burned by wildfire in the 21st century. However, they conclude that "fire in California and Nevada appears to be relatively insensitive to summer climate, and area burned in these states may not respond strongly to changed climate." In their study, McKenzie et al. (2004) make two errors with respect to their analysis in California. First, they neglect to account for California's Mediterranean-type climate, which features a summer drought of 3-6 months. Second, McKenzie et al.'s (2004) analysis bins southern and northern California, which each contribute about half of California's total burned area in an average year but which are extremely different in their fire-climate relationships. Their analysis thus buries the relatively strong relationship that exists between fire and summer climate variables (in this case, temperature) in the assessment area and other parts of northern California (Westerling et al. 2006, Miller et al. 2009b) under the southern California fire-climate relationship, which is essentially independent of summertime temperature or precipitation (Keeley 2004). In summary, changes in summer temperature and precipitation are unlikely to have strong effects on southern California fire area, but McKenzie et al.'s (2004) predictions for the western US in general are likely to have validity for most of the assessment area.

PC 287: The Forest Service should require retention of at least 90% of any moderate/high-severity burn areas which are created by fire, wildland or otherwise, outside of the Defense Zone, and retain the maximum possible amount of such habitat that can be retained in the Defense Zone while ensuring protection of homes.

Response: We recognize the value of moderate and high severity burned habitat and to better reflect that recognition, the Revised Forest Plan has been updated with a revised burned area standard, and now incorporates a strategy designed to promote this important habitat type. However, having a forest-wide standard regarding a snag retention requirement will be problematic. Standing snags often present safety hazards. Further, once snags fall to the ground, they can present serious fire control problems. Retention standards for burned areas are best set at the project level through an interdisciplinary process.

PC 12: The Forest Service should disclose how climate change will affect the achievement of fuels objectives.

Response: The desired conditions in the proposed forest plan describe forest conditions expected under a more natural disturbance regime. Forest Plan Table 1 also describes structural conditions related to seral-stage ranges expected to develop and be maintained by such a regime, in which reigning climate is a main factor regulating fire activity and fire effects. Forest conditions resembling the desired conditions described in the proposed forest plan would be much more resilient to climate change than current conditions. While it may be possible to meet short-term hazard reduction objectives by retaining all trees greater than 12 inch dbh, it would be difficult to meet forest restoration objectives, although the proposed 12 inch limit does not go into effect until the initial treatments of the collaboratively developed Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy (the 10 year fuels strategy) are complete. Alternative D proposes a strategy where fire is the primary tool used to thin stands. While this is a viable strategy in more remote places, the fire and fuels analysis determined that the likelihood of conditions needed to implement such a strategy is overly reliant on conditions outside of our control.

Some commenters expressed that Alternative D should be chosen over Alternative B since it did more to protect habitat and still met fuels objectives, as did all the alternatives. Regarding the effectiveness of all alternatives meeting fuels and fire behavior objectives, this is largely because all the alternatives assume successful completion of the collaborative 10 year fuels strategy. The 12 inch diameter limit will not be in effect until completion of the strategy. At that time, Alternative D will eliminate the WUI threat zone and the 12 inch diameter limit will go into effect outside the defense zone. Then, in effect, fire will be the main tool allowed for further thinning of the forest. As stated above, this may be suitable in some circumstances. However, this strategy was shown to have higher risk and to have a lower probability of success compared to Alternatives B and E; primarily due to the associated uncertainties. Alternatives B and E provide substantial habitat protections, especially in light of recent changes and additions to various standards and guidelines in the Revised Forest Plan (Alternative E).

Some commenters preferred Alternative D because it allows more area available to managed wildfire for resource objectives. While Alternative D (As well as B and E) proposed the most acres available for managed wildfire, Alt. D has more restrictions to other types of management options; thereby reducing the flexibility that will be needed should the environmental or

regulatory conditions necessary for safe implementation not materialize and all the eggs are essentially in the same basket. Alternatives B and E proposes equal area open for managed wildfire, but allows more flexibility to use other tools to meet objectives should opportunities to use managed wildfire do not materialize.

PC 99: The Forest Service should reintroduce natural processes such as fire.

Response: Alternatives B and E provide appropriate flexibility to meet restoration objectives to achieve desired conditions including reintroduction of natural processes.

Some commenters expressed support for managed wildfire but concern for community protection. All four alternatives place community protection as a primary objective. Managed wildfire decisions will be made only if risks to communities can be mitigated. Likelihood of affirmative managed wildfire decisions decrease with proximity to communities.

PC 174: The Forest Service should provide a balance between native wildlife protection and fuels management.

Response: Alternatives B and E provide a balanced approach reflecting the importance of wildlife and their habitats, reducing risk to communities and resource values, and the many uses and activities that occur on the forest. Any projects such as vegetation and fuel treatments implemented will be designed through the interdisciplinary process to achieve or maintain desired conditions described in the proposed forest plan. Creating and maintaining more fire resilient landscapes is a high priority.

Some commenters expressed support for fuels reduction and said that the project slash should be used as biofuels. The LTBMU supports biomass utilization. The biofuels industry is generally market driven and market forces will determine whether slash or other biomass is utilized as such.

PC 5: The Forest Service should implement a more aggressive fuels management program.

Response: Alternative C is our most aggressive in terms of fuels management. Alternative D is the least aggressive. However, all the alternatives propose to follow the collaboratively developed Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy (2007) for initial WUI treatments. All treatments, both inside and outside the WUI, will be designed on a project specific basis, and while fuels reduction may not be the primary objective outside the WUI, these projects will usually have fuels reduction as an ancillary benefit.

Some commenters are long-time residents of the Tahoe area and are concerned about the apparent increasing fire activity in recent years. It is true that fire size and severity appears to be increasing in the Lake Tahoe Basin, as it is in other areas in the western US. The reasons for this are mainly because fuels continue to accumulate when we put all the fires out. Historical (presettlement) fires burning with relative frequency regulated fuel accumulation. Warming climate is also cited as a cause of increased fire size and severity. It is uncertain how much population increase is expected in the Lake Tahoe Basin but population size is usually well correlated with ignitions.

Some commenters are concerned that managed wildfire is to dangerous due to the hazardous fuel conditions. While managed wildfire is allowed to some degree in all alternatives, in none is it allowed in the WUI defense zone (immediately adjacent to homes). Prescribed burning and managed wildfire will always be conducted under prescribed criteria. All the alternatives also propose to implement the 10 year fuels reduction strategy.

Some commenters expressed concern that additional wilderness areas will compromise the ability to manage or suppress wildfires. Areas proposed for Wilderness designation are currently roadless areas. As such they have limited access for increased fuels reduction. Although Regional Forester approval is required to use some suppression techniques in Wilderness, approval is generally granted in a timely fashion when lives and property are at risk. Where adjacent to WUI and appropriate and necessary, roadless areas will be treated, but will most likely be limited to hand treatments. All fuels treatments are designed to meet minimum fire behavior objectives.

PC 22: The Forest Service should ensure effective fuels management in areas where WUI overlaps the Backcountry Management Area.

Response: Since WUI does not overlap most roadless areas, fuels treatment occurs infrequently in roadless areas. However, any portion of Inventoried Roadless Area that is located in WUI will be considered for fuel hazard reduction and project level planning will determine treatment design criteria. All fuels projects, in roadless areas and elsewhere, will meet minimum fire behavior modification objectives. Protection of communities receives top priority.

PC 100: The Forest Service should reduce hazardous fuels.

Response: All the alternatives propose to follow the collaboratively developed Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy (2007).

Other commenters expressed concern over changes in suppression and prevention capabilities. Suppression and prevention programs remain unchanged in any alternative.

PC 282: The Forest Service should clarify the acres of managed wildfire in each alternative.

Response: The 1988 Forest Plan as amended by the Desolation Wilderness Plan allows managed wildfire in the Desolation Wilderness. The LTBMU portion of the Desolation Wilderness is the only area where this management practice would be allowed under Alternative A (1988 Plan as amended). In Alternatives B, D and E, managed wildfire is allowed on all NFS lands except the WUI Defense Zone. In Alternative C, managed wildfire is allowed on all NFS lands except the WUI Defense and Threat Zones.

In the Fire and Fuels section of the FEIS (3.4.10) we modeled potential managed wildfire acres based on historic lightning ignitions and weather conditions conducive to managing wildfires for resource objectives. The maximum annual acres of manage wildfire in the FEIS are estimates of maximum acres under optimal conditions and are intended as a best-case scenario. It would be unwise to prescribe a minimum managed wildfire target since there are a multitude of uncertain factors required for these decisions that are outside of our control such as weather and regulatory limitations.

PC 488: The Forest Service should make fuels management the top priority.

Response: All the alternatives propose to follow the collaboratively developed Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy (2007). Fuels management is a high priority under all alternatives, because roughly 75% of the Lake Tahoe Basin is within the Wildland Urban Interface.

Some commenters are concerned that roads needed for fire access would be eliminated. Roads that are required for emergency access are retained.

PC 491: Forest Plan should emphasize and ensure prescribed fire that mimics natural processes to the greatest extent possible (i.e., summer/fall burning), and discourages unnatural practices such as pile burning and artificial ignitions during the wet seasons (winter, spring).

Response: The LTBMU recognizes the role of fire and the need to restore natural processes to enhance forest health and resilience. This point is emphasized throughout the Revised Forest Plan and the FEIS. We also acknowledge in the vegetation and fire and fuels sections (3.4.10 and 3.4.11) that pile burning and mechanical treatments are not natural. Mechanical treatments are often necessary precursors to applying fire treatments in a safe and effective manner. Pile burning is often the most feasible means to dispose of residual post-treatment fuels which then enables follow-up maintenance burns in the future. While the ecological effects of pile burning are mixed, it does put fire back into the system. When possible, fire is allowed to creep between piles, providing enhanced ecological benefit over just pile burning. Usually ecological underburning cannot be implemented until the piles are burned. As such, pile burning is a critical element in the effort to restore natural processes. Lastly, in regards to season of burning, as described in the Fire and Fuels chapter of the FEIS, a variety of constraints limit opportunities for prescribed burning. Missing any opportunity only exacerbates the backlog problem related to fire return interval departure.

PC 493: The Forest Service should consider the limitations of FRCC in their fuels planning and analysis.

Response: The plan does not use Fire Regime Condition Class (FRCC) data. The FEIS Fire and Fuels section (3.4.10) does use Fire Return Interval Departure (FRID) to derive condition classes based on current departure from reference pre-settlement fire regime mean point fire intervals. Please see:
http://www.fs.fed.us/r5/rsl/clearinghouse/r5gis/frid/California_FRID_graphic_2011b.pdf

PC 494: The Forest Service should explain their strategy for burning piles.

Response: Pile burning is a significant component, and one of many options and tools used in the fuels reduction and forest restoration strategies. Where fuels have accumulated or grown to hazardous conditions, fuels reduction is often needed to reduce potential for undesirable fire activity. This usually requires cutting trees and piling the material as part of the phased treatment schedule. Alternatives to burning piles are considered, but due to costs, access limitations, or other constraints, burning the piles is often the most practical option.

Some commenters asked why piles were created and burned so close to live trees. Some degree of overstory tree mortality is acceptable during prescribed burning, and may in fact, be desirable, as when trying to enhance wildlife habitat by creating snags.

PC 495: The Forest Service should restore resilience to forests through reintroduction of fire.

Response: The LTBMU recognizes the role of fire and the need to restore natural processes to enhance forest health and resilience. This point is emphasized throughout the Revised Forest Plan and the FEIS. Under current direction, the Forest Service is required to suppress all human caused wildfires, and naturally caused ignitions in the Desolation Wilderness may be managed for resource objectives if conditions permit. The new proposed plan allows substantially more opportunities to managed wildfire. However, all human caused ignitions will be suppressed as per National Fire Policy.

Some commenters support reintroduction of fire but have concerns for community protection. All four alternatives place community protection as a primary objective. Alternatives B and E provide appropriate flexibility to meet restoration objectives to achieve desired conditions including reintroduction of natural processes.

PC 497: The Forest Service should improve the analysis of fuels.

Sample Comment: *"the DEIS fails to divulge the fact that most of the fire that occurs in Sierra Nevada forests occurs at less extreme fire weather than 90th percentile, and fails to disclose the fact that current fires are strongly dominated by low/moderate-severity fire effects."*

Response: As stated in the Fire and Fuels section "As with all models, FLAMMAP provides estimates of possible real-world processes. The model will never perfectly replicate actual events." However, models are sometimes useful. In this case, FLAMMAP is used to describe the relative fuel hazards throughout the LTB in terms of crown fire potential. We agree that fire under less severe burning conditions is less of a concern to fire managers trying to protect values at risk. But fire managers need to plan for conditions that are problematic such as expected fire behavior at or above 90th percentile weather conditions. Recent large fires in the Lake Tahoe Basin have burned at severities greater than the "low/moderate-severity" as stated in the comment. Modeling fire behavior at low fire weather conditions would not provide the type of information needed when planning to reduce the risk to communities and others values at risk.

PC 500: The Forest Service should use natural ignitions for fuels reduction and forest health.

Response: Restoring natural processes is a focus area of the Revised Forest Plan. The LTBMU will use fire when possible (prescribed fire and managed wildfire) to achieve desired conditions as described in the Revised Forest Plan, while mitigating safety concerns, and within regulatory environmental constraints.

PC 507: The Forest Service should only conduct fuels treatments within less than 100 meters of individual homes.

Response: The effectiveness of WUI fuel treatments at reducing fire intensity and fire effects is well documented (Safford et al. 2012). The need for more fire resistant home construction is

recognized. However, the Forest Service manages federal lands and has little influence on how private citizens construct their homes and must reduce risks near communities regardless of the flammability of structures. Cohen (2000) states that "Consequently if the community or home site is not considered in reducing WUI fire losses, extensive wildland fuel reduction will be required. For highly ignitable homes, effective wild-land fire actions must not only prevent fires from burning to home sites, but also eliminate firebrands that would ignite the home and adjacent flammable materials. To eliminate firebrands, wildland fuel reductions would have to prevent firebrand production from wildland fires for a distance of several kilometers away from homes". Therefore, since the Forest Service cannot ensure homes will be fireproof, fuels treatment is required. The Forest Service intends to reduce risk to ALL homes, not just "most" homes.

PC 506: The Forest Service should suppress all natural ignitions.

Response: Restoration of natural processes, including fire, is essential components to the ecosystem restoration of the LTBMU. Prescribed fire and managed wildfire are the main tools used to meet these objectives. The proposed Forest Plan does not allow managed wildfire in the WUI defense zone. Use of prescribed fire or managed wildfire will occur only when safety issues can be mitigated. Heavy equipment and large air tankers will only be used during suppression actions. The exception to that will be if heavy equipment is used in pre-treating areas prior to use of fire. During prescribed fire and managed wildfire operations, spotting potential will be a consideration fire managers address prior to and during implementation. The Angora fire is a good example of conditions at which, and locations in which, suppression will be the obvious action taken. The 1988 wildfire use event in Yellowstone occurred within the natural range of variation for the lodgepole pine forest of that region. That is an infrequent and high severity fire regime, and as such, the fire behavior and effects were as expected for that type of regime. The forests of the LTBMU are mostly Jeffrey pine, mixed conifer, and red fir; forests that historically had a much more frequent fire regime of mostly low to moderate severity. Currently many of these forests are overstocked due to fire suppression and past logging. Managing natural ignitions and using prescribed fire are the tools we need to utilize to move the forest into a more natural and resilient condition.

Forest Vegetation

Old Growth / OFEA

PC 25: The Forest Service should provide explanation of how old growth will continue to be protected without the OFEA

PC 98: The Forest Service should protect and promote old growth forests

PC 442: The Forest Service should maintain OFEAs

Response: The OFEAs in the current forest plan were not delineated by the local unit. Rather, they were delineated through a regional process and for the purpose of connecting habitats of old forest dependent species Sierra Nevada wide. However, these areas in the Basin do not contain all of the old or late seral forest stands. The Revised Forest Plan would emphasize the same concepts originally designed for the current plan, but apply them to each location of late-seral forest throughout the Basin. That is, design treatments to enhance/perpetuate the existing late-

seral forest stands while enhancing/promoting mid-seral adjacent stands that most effectively connect late-seral habitats (e.g. spotted owl or Goshawk Protected Activity Centers (PACs) and Home Range Core Areas (HRCAs)). In order to enhance or perpetuate late-seral stands, in some cases on a project-specific basis, prescriptions will need to have some flexibility in order to accomplish this objective. That is, have the ability to kill or remove trees greater than 30 inches in diameter. This option, though an exception, will become more essential as larger trees become more prevalent, but still need space to grow. Such a prescription that includes this exception will focus primarily on outcomes with wildlife habitat in mind.

Maintaining all late seral stands is more effective than OFEAs and the objectives and S&Gs are aimed at enhancing the longer-term health and resilience of these areas as well as provision for management adjacent to PACs and HRCAs (see Biological Resources Program Strategy for connectivity between Late Seral stands and in Forest Vegetation S&Gs regarding opening locations).

Standards and Guidelines have been added and/or clarified to the Revised Forest Plan to ensure protection of late seral stands, with the result that the standards and guidelines in the Revised Plan now provide stronger protection than the current Plan as amended.

PC 447: The Forest Service should consider how their literature citations for old growth are applied

Sample Comment: *"Appendix D (Volume III) cites to van Mantgem et al. (2009) for the proposition that old-growth forests are dying at increased rates, despite the fact that that study provided no data on old-growth trees (the largest size class was trees over 15.8 inches in diameter), and did not find that old-growth trees were experiencing accelerated mortality."*

Response: In Appendix D the Van Mantgem et al. (2009) citation is a broader look at mortality in old growth stands. They view mortality for the western USA and Sierra-wide. Also, this section is in relation to climate change and the term old growth is not used in the other Forest Vegetation sections in this analysis.

In Chapter 3.4.11 of the FEIS (Forest Vegetation) the annual mortality surveys in the Lake Tahoe Basin show overlap with Protected Activity Centers for Spotted Owls and Goshawks, which tend to be areas in or trending towards late seral. The quantification of mortality in the table and from personal observation indicates that the larger trees are succumbing to bark beetle infestations. The primary factors related to the mortality appear to be from high densities of competing trees in both over- and under-stories along with lower than average precipitation.

The literature provided by commenters tends to focus on forest conditions more indicative of wetter forest conditions and different forest types of west slope orientation. For these reasons, this literature is problematic for establishing desired conditions in the late seral stages of development. The literature used for the analysis conducted in the FEIS focused primarily on studies in the Lake Tahoe Basin or areas in proximity to the Basin.

There are two camps within the plethora of literature covering the topic of Old Growth. 1) Quantitative, i.e. over a certain size tree, or 2) Qualitative, i.e. contain certain conditions. Neither camp looks at individual trees, but rather at a stand-level perspective.

The analysis for the revision of the forest plan is based on late-seral forest rather than old growth as there are too many sometimes contradictory findings in how old growth as a condition is defined. Thus, where needed, qualitative conditions and quantitative conditions are given to describe desired conditions and design criteria.

See Bouldin (1999) for comparative trend between increases in small to mid-sized trees versus a decline in larger trees across Forest Inventory & Analysis plots between 1935 and 1992. This study has been corroborated by others (e.g. Dolanc et al., 2010). In addition to these studies, the USFS State and Private Forestry, Forest Health Protections' annual aerial mortality surveys of the Lake Tahoe Basin indicate a trend of mortality in pockets of large trees (aka old growth) due to drought stress, competition from high densities of trees, and bark beetles.

PC 441: The Forest Service should re-evaluate the criteria used in identifying old growth stands and explain their rationale.

These are found in Table 1 of Part 1 of the Revised Forest Plan. We do not use the term old growth, but rather use the term late seral open or late seral closed. The reason for this is that old growth generally is a small fraction of the late seral stage, is subject to a wide range of perceptions, and generally occurs as a condition that has escaped stand replacing fire or other disturbances often over a period of centuries. This condition in the lower elevations would be rare in the Basin given the high frequency of historic fire. Thus, late seral is used to identify habitats on which certain species are dependent.

The 2000 Lake Tahoe Basin Watershed Assessment used two definitions of old growth: one by Joanne Fites that used large trees over a certain size, and one by Michael Barbour that did not include stands where tree cutting had been done. We agree that by either definition, the late seral stages are below historic levels and our desired conditions seek to increase this stage within all of the major forest types. The criteria used for differentiating seral stages are quantitative, based in part on California Wildlife Habitat Relationships classification system as well as additional models integrated by R5 Ecologist Hugh Safford.

PC 217: The Forest Service should include basal area retention requirements

PC 218: The Forest Service should include canopy cover requirements for areas outside of PACs and HRCAs

Response: Basal area and canopy cover retention percentages as per the current forest plan tend to interfere with meeting treatment objectives. The goal of such retention requirements, however, is espoused in the plan revision by targeting smaller understory trees for removal so as to enhance the larger overstory trees. Inadvertently limiting the target trees for removal jeopardizes the ability of the FS to improve the health and resilience of the overall stand. Forest Plan direction has been added to maintain habitat quality adjacent to PACs and HRCAs (see Wildlife response to comments), and to limit canopy cover removal in late seral closed stands.

Openings/Early Seral Forest

PC 446: The Forest Service should clarify strategies for maintaining openings and early seral forest.

Sample Comment: *"Also missing from the draft Plan is a science-based discussion of the difficulties of maintaining "early seral" treatments or "openings" in the forest when simple observation of "treated" areas reveals that both the understory and trees regenerate easily? How often will treated areas need to be "maintained" and at what costs to agency budgets? Are maintenance costs built into the treatment budgets?"*

Response: There is no strategy for maintaining early seral treatments or openings. Early seral and forest openings are transitory conditions. We would expect them to continue growing and evolving into mid and late-seral conditions. If the LTBMU continues to be deficient in early seral, we would create more until the balance described in the desired conditions is achieved.

PC 87: FEIS should explain why maximum opening is 10 acres when this is not a current practice in R5

PC 215: The Forest Service should not create 10 acre clearcuts

PC 498: The Forest Service should clarify the rationale for and the effects of creating openings

Actually, this is a current practice and use of the group selection with reserves prescription comes from the Herger-Feinstein Quincy Library Group forests within Region 5. In addition, the current forest plan calls for 7 acre openings to create early seral habitat. Throughout the implementation of this plan, the unit has not actively created such openings due to the need to address two major insect outbreaks (one in the late 1980s and the other throughout the 1990s) and the reduction of hazardous fuels (a national mandate) to reduce the threat of catastrophic fire around communities at risk (the Basin has numerous communities at risk throughout the Basin), and to address the restoration of the Angora Fire (2007) area.

Clear cut logging is not mentioned in the FEIS or Plan because it is not a current practice on the LTBMU. The Plan does clarify what is in the FEIS regarding the Group Selection with Reserves prescription. This is primarily in the Wildlife and Vegetation sections (3.4.23 and 3.4.11).

Guidance in the revision of the forest plan is to move some of the mid-seral stage of each major forest type, which is the most over-abundant seral stage in all types, to an early-seral stage, which is the least abundant in all types. These seral stage adjustments will occur primarily in the second 10 years of the forest plan and on a small scale. Most openings will be 5 acres or less and only in a rare instance and in areas where project-specific analysis warrants will an opening be 10 acres. Also, such openings may not appear to be openings as the preferred prescription to return some mid to early seral is called group selection with reserves. That is a group of trees are selected for removal while clumps or individual large (legacy) trees are reserved for structural heterogeneity and sources of seed for the regeneration of preferred species.

From Helms (1998): **Group Selection with Reserves** is a form of uneven-aged (selection) methods to regenerate and maintain a multi-aged structure by removing some trees in all size classes either singly, in small groups, or in strips

—group selection trees are removed and new age classes are established in small groups

—group selection with reserves some trees within the group are not cut to attain goals other than regeneration within the group

Agreed. The mid-seral stage of forest stand development is over abundant for all major forest types across the Basin. After considering other resource objectives, e.g. PACs/HRCAs, recreation sites, and cultural/historic sites, as well as visual quality objectives, some of this mid-seral stage would be treated on a site-specific basis and consistent with project-specific goals and objectives to return small portions to an early seral stage.

The size of such openings would not exceed 10 acres and the majority would be 5 acres or less, depending on the topography and geographic features (streams, roads, etc.). The predominant prescription is called **group selection with reserves**, which allows for removal of some of the

overstory while also retaining small clumps of trees that generally contains the largest trees to serve as seed trees. Over time these openings would grow from early seral to mid seral. Treatments scheduled from the early seral stage onward would allow greater flexibility to achieve late seral characteristics (>100 year timeframe).

Openings made in white fir/mixed conifer stands could be planted with Jeffrey pine in order to restore historically occupied Jeffrey stands. Following the Comstock-era logging of pine at the turn of the last century, many pine stands grew back as fir and in the absence of fire have persisted as fir instead of pine.

PC 234: The Forest Service should leave clumps of mid-seral forest in the large openings to create more varied wildlife habitat.

Response: Agree. This is exactly what we intend in our forest plan. We have clarified the use of this type of feature, using the prescription for these opening called Group Selection with Reserves. This means that openings would retain some larger (legacy) trees and/or clumps of trees as well as some of the advanced regeneration of desirable species in the understory.

Post Disturbance Tree Removal

PC 10: The Forest Service should not implement salvage logging

PC 73: The Forest Service should provide standards to prevent salvage logging after major disturbance events to protect habitats

PC 130: The Forest Service limit the amount of entry into the burned landscape only to manage areas where hazard trees may hit homes or roads

Response: Post-fire restoration treatments will be prescribed and evaluated on a project-specific basis. In addition to analyzing for impacts (whether real or potential) from post-disturbance treatment, there are real and potential impacts of not treating the post-disturbance conditions.

The Revised Forest Plan includes direction for restoration of burned areas and does not promote salvage logging of woody material. Rather, logging is a tool that may be used when other means would not be as effective. Not using such a tool could cause a trade off in terms of some other impacts from, e.g. hand piling and burning, which would mean more smoke in the air. The appropriate type of logging system can be chosen on the basis of resulting conditions from the wildfire.

Generally, the objectives analyzed in the project-specific analysis include tree/woody material removed for public or worker safety, pro-active fuels reduction, or another objective, e.g. scenic. After safety considerations are met, wildlife habitat would be the next driver for retention of post-fire mortality. When post-disturbance wildlife considerations are met, e.g. 3-5 yrs., then removals/ fuel reduction could occur in WUI. Cost recovery would not be an objective, but could assist in reducing the overall cost impact to the tax payer if markets are available.

PC 79: The Forest Service should acknowledge the scientific controversy: (1) logging is an effective way to mimic natural disturbances, (2) removing large trees reduces fire risk and

increases vigor of remaining trees, (3) no ecological benefit from logging dead trees and replanting seedlings after natural disturbance

Response: We disagree that the use of surrogate treatments in place of natural disturbance, primarily thinning and fire, in human-altered forests where past logging and fire exclusion have occurred is controversial. In fact, the impacts of such historic practices, if left to further degrade would result in completely unnatural wildfire, bark beetle outbreak, disease pockets, and lower vigor such that young to mid-seral stage forest stands would be unlikely to adapt to climate change and succeed to a late-seral stage. However, we acknowledge that there are potential impacts to both treatment and unplanned disturbance (natural or human-caused, e.g. wildfire from lightning or an abandoned campfire), but these are analyzed at a project-specific level.

There is no disagreement that if the forest around Lake Tahoe were closer to the natural range of variability then the need for surrogate treatments would be less. Surrogates by their very nature do not represent the actual effects of natural disturbance. This is not disputed. Given the proximity of the forest to the developed interface, policy requires that human-caused wildfires be suppressed, thus limiting the use of this tool.

To be clearer than we may have been in the Draft EIS/Plan, large trees greater than 30 inches in diameter are cut, killed and/or removed as an exception in certain circumstances where doing so enhances the health of the residual stand of trees, public safety, or restores habitats (e.g. aspen). The analysis shows that there will be a greater occurrence of trees over 30 inches dbh in years to come. These stands will continue to grow and require thinning to remain resilient and healthy. Thus, trees greater than 30 inches will need to be cut.

PC 37: The Forest Service should utilize all of the active management techniques, including mechanical treatment, available to the agency.

Response: Where feasible and determined to be effective, mechanized equipment will be utilized to accomplish project objectives. Innovation to remove and utilize woody material from hand treatments rather than piling and burning it are also options to be determined on a project specific basis. In current projects consideration has been given to using cable systems that could partially suspend trees when sufficient road or trails are present to allow for such a system. Innovative systems could aid in the treatment of stream and other riparian zones as well as on steep slopes that are inaccessible to mechanized equipment. BMPs are determined during project planning and analysis.

Forest Health

PC 178: The Forest Service should maintain forest health to promote a strong local economy

Response: Agreed. Forest health in the plan is a desired condition that in turn improves scenic integrity (i.e., a healthy forest is generally considered at a low risk of bark beetle caused mortality at outbreak levels or low risk of large crown fires) and sustains a diverse array of wildlife habitats. Healthy ecosystems provide high quality recreation settings which in turn, support economic health.

PC 205: The Forest Service should define forest health in the Forest Plan

Response: Forest health is defined in the FEIS Glossary (Volume III, Appendix M). An exact definition of what constitutes forest health can be debated so it is important that for our forest plan we provide one that clarifies our intent relative to our desired conditions. From Helms, 1998: **Forest Health** – *The perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence of unusual levels of insects or disease, and resilience to disturbance.*

When this definition is applied to a landscape, across all major forest types, a healthy forest would be one that is sustainable over the long run, i.e. centuries. Factors of forest health that are currently in a very poor state include the diversity of age and structure, vigor, and resilience to disturbance. These are the factors that the plan primarily seeks to address over the next 20 years and beyond.

PC 97: The Forest Service should minimize tree removal during fire suppression activities

Response: The FS when suppressing fire in the Basin most often utilizes MIST or minimum impact suppression tactics in order to lessen the impacts of fire suppression on the natural resources. Logging is not generally feasible during fire suppression, but the falling of trees hazardous to fire fighters or to return flaming trees to the ground are used. Perceptions of what does or does not constitute a hazard from large trees during fire suppression are beyond the scope of this plan. This is an operational decision that must weigh the administrative or resource advisory inputs, but yet remain an on-the-ground decision with suppression forces.

PC 169: The Forest Service should explain why there is no timber production requirement for the LTBMU.

Response: The current forest plan determined lands within the LTBMU did not meet national criteria for timber production. These include criteria for suitability or productivity. The FEIS conducted a similar analysis to determine whether lands within the LTBMU met these criteria and they did not (Volume III, Appendix G – Timber Suitability). Only lands that are suitable and productive are considered for allocation of timber volume targets established by the US Congress and meted out through the Regional Office. However, this does not mean that there are no wood products coming off of NFS lands within the Basin. Volume that might be sold as part of a “timber sale” or “service contract” for other objectives is not target driven.

PC 224: The Forest Service should actively restore forested ecosystems suppressed by lack of fire.

Response: Agreed. This is an important objective in the forest vegetation section of the Forest Plan and is essential to re-introduce fire in order for the ecosystem to function more naturally.

Tree Removal

PC 104: The Forest Service should eliminate logging and extractive industries from our public lands

Response: The forest in the Lake Tahoe Basin, though green and beautiful today, is not the figure of good health. Over 90 percent of the lakeside forest was harvested to supply timbers to the silver mines in Nevada in the late 1800s and early 1900s. At the same time, suppression of wildfire was adopted as policy to protect natural resources, development and people. As a result, the forest around Lake Tahoe has not developed as it would have if natural processes such as fire occurred. To protect scenic values and ecosystem services as well as wildlife habitats, a proactive approach is necessary and logging is a tool used to manipulate forest vegetation to accomplish a variety of these resource goals/ objectives. The FS contracts work to be accomplished on NFS lands and it is the contractors' prerogative as to whether wood removed from a project site is suitable or even economically feasible for deliver to a wood utilizing industry.

There are currently no extractive industries located within the Lake Tahoe Basin on NFS lands.

PC 216: The Forest Service should clarify standards for cutting trees greater than 30 inches DBH.

PC 233: The Forest Service should only remove trees greater than 30 inches DBH when absolutely necessary.

Response: Agreed. The 30 inch diameter exceptions are intended to enhance and promote late-seral habitats as well as provide for public safety and in certain other cases. These cases need to be determined on a project/site-specific basis. Forest Vegetation Standards and Guidelines were updated for clarification in coordination with a wildlife biologist and fire ecologist to ensure a more cohesive integration of this item. In some instances, for example, it is not necessary to cut and remove a tree if killing it and leaving it in place as a feature of a habitat such as snags or down wood is the objective.

PC 229: The Forest Service should prohibit felling of trees more than 150 years old.

Response: Disagree. The majorities of trees in the four major forest types are already over 100 years of age and are classified as mid-seral stage of development. Many of the trees in this seral stage are likely to be 150 years old. However, if they are larger than other overstory trees, they would likely be retained during thinning and even where openings may be made as a reserve tree or part of a clump of reserved trees.

What is important is the fundamental aspect of tree growth in older trees, which is that reducing competition, even in older groups, can show a positive growth response in the remaining trees, thus allowing them to continue growing to a much older age. In the case of the major forest types analyzed in the Basin, Jeffrey pine can typically reach an age of 400-500 years if they have room to grow with some known cases of up to 600 year; red fir can likewise grow to more than 500 years; and in the case of white fir up to about 300 years. Given the longevity of these tree species when growth conditions are adequate (i.e. room to grow), the current ages of the major forest types at Lake Tahoe are still on the younger side and appear to be correctly categorized from an age perspective primarily within the mid-seral stage of development.

PC 230: The Forest Service should not cut trees.

PC 437: The Forest Service should either eliminate most cutting or substantially reduce the area of the planning unit exposed to either scheduled or non-scheduled cutting.

Response: Cutting trees is an essential piece of nearly all management aimed at sustaining Tahoe's forest and associated benefits as well as reducing the risk of catastrophic fire to the adjacent communities. We recognize that cutting trees has an emotional, even spiritual effect on people who value them inherently. However, we also realize that our own habitation within and around the forest restricts the natural trajectory of forest growth and disturbances that would ordinarily shape the openings and thin the understory trees. In lieu of these natural disturbance processes, we bear the responsibility to emulate as close as possible what these processes would have done, following an ecosystem-based approach.

The management of Lake Tahoe's forests is not driven by forest industries; in fact, there hasn't been a market for timber products since 2007. The role any market outlet has in terms of the forest management that is implemented on the Basin is to reduce the cost (of tax dollars) to reduce hazardous fuels, improve wildlife habitat and forest health, and restore fire into the ecosystem.

PC 231: The Forest Service should focus on removing trees that are younger, ladder trees, or within the dripline of more mature, sturdy trees.

Response: Agreed. This is one of the strategies employed to achieve conditions that would be similar to those if fire had periodically burned in the understory. In part, this strategy is to restore fire in the ecosystem and in the event of a wildfire, allow for suppression resources to safely operate and in part to provide growing space to the stand of trees in order to be more resilient to fire, bark beetles and other drought related causes of mortality. This strategy is used in both mid and late seral stages.

See response to PC 229 for discussion of removing trees around more mature trees.

PC 232: The Forest Service should not cut trees >30 inches diameter.

See response to PC 216.

We disagree that trees greater than 30 inches should not be cut. However, we have improved the language in the forest plan to reflect our intent that the cutting of trees greater than 30 inches is an exception and not a general practice. The circumstances in which trees over this diameter would be cut are also explained in greater detail.

The forest that has been growing back since the Comstock silver mining era removed most of the trees from around the Lake is essentially a single-aged forest that lost its structural heterogeneity as well as the ecological role of fire. Instead of frequent low intensity fire thinning and controlling shade-tolerant species in the understory as well as fire intolerant species in the overstory, the current forest has grown into an over-dense, single cohort of even-aged trees, which as they get larger require greater amounts of water to survive. As a result, the forest has had some growing pains in the form of two recent (late 1980s and throughout the 1990s) bark beetle outbreaks and three large fires (Gondola in 2002, Showers 2002, and Angora 2007) that burned at high severity. Although both forms of disturbance would occur naturally, these events were not what the research into historic conditions would describe as within the historic range of variability.

Management that is not permitted to cut and/or remove trees greater than 30 inches will ultimately fail to sustain the forest at Lake Tahoe. More dramatic changes will be in store over the short and long term with potentially devastating effects on the people, their homes and business and infrastructure when bark beetle outbreaks and catastrophic fires occurs.

PC 453: Forest Service vegetation management practices are too destructive.

Sample Comment: *"I live near Rabe Meadow, and the damage from the recent tractor logging was truly unconscionable."*

Response: Regarding Rabe Meadows, the Round Hill Project utilized a cut-to-length system that uses low ground pressure equipment and fully suspends the material removed using a forwarder. Along scenic Highway 50 and along the Lam Wah Tah trail, more trees were left to retain edge effect and scenic quality. No logging was conducted in the meadow. This project achieved its stated purpose and need, and in the event of a wildfire, suppression efforts will be more safe and effective.

Treatments to reduce hazardous fuels and restore forest health when conducted using mechanized equipment will appear disturbed for 3 to 5 years following the treatment. Although these treatments employ best management practices and resource protection measures, the result at the time of treatment stands out from untreated forest and it takes some time for those disturbances to return to a more natural appearance. There are certain trade-offs between the type of disturbance that occurs when a high intensity crown fire occurs versus a treatments meant to emulate a low intensity surface fire. What is considered destructive is a matter of perspective.

Thinning is conducted at various levels depending on the forest type, aspect, and slope. The amount of change to achieve the desired density for forest health depends on the pre-treatment

density. That is, some stands are excessively dense and require more thinning than stands that are closer to the desired condition. Opening the forest so that light reaches the forest floor allows rather than prevents understory vegetation growth. Not only does this enrich understory growth, but results in greater food sources and cover for rodents and other ground mammals (see biology sections) that in turn can benefit spotted owl and goshawks.

PC 455: The Forest Service should conduct logging during winter to reduce impacts.

Response: The Forest Service conducts most operations during the dry time of the summer, which permits fuller access to the forest stands and the ability to treat all surface fuels. In winter months, access is somewhat problematic and the surface fuels beneath the snow are inaccessible. Winter operations policy requires sufficient packed snow depths that are not predictable in some winters or location, especially on the east shore. Operations in wetter areas can become feasible in the winter when these areas freeze over. However, timing and duration of suitable operations become further complicated with the mobilization of equipment to accomplish the treatment needed.

PC 456: The Forest Service should allow more public use of thinned trees.

Response: Agree. However, this will depend on location of trees thinned, size of thinned trees, amount of trees to be thinned, and ability of the public to safely remove the thinned trees without damaging resources. In some instances a free use permit can be obtained to assist the Forest Service in treating forest stands adjacent to private property and in other cases a permit with qualifications is required.

PC 457: The Forest Service should consider how their literature citations for vegetation management are applied.

Sample Comment: *"The EIS Does Not Discuss Literature that Concludes Harvesting Large Trees is Unnecessary to Increase Tree Vigor. The Design Criteria's Standards and Guidelines contradict the rationale and conclusions of numerous scientific studies conducted in California forests regarding stand density and tree vigor. This is not a minor issue, as large trees are significantly more scarce on the Sierra Nevadan landscape than they were historically due to past logging practices (McKelvey and Johnston 1992, Franklin and Fites-Kauffman 1996) and large live and dead trees are critical habitat components for both California Spotted Owls and Black-backed Woodpeckers. Guideline SG33 of the Design Criteria (Volume II on page 96) states that trees 76 cm can be logged if "[s]hade tolerant trees larger than [76 cm] are increasing the rate of mortality or out-competing preferred species…Changes in SEZ conditions have allowed conifer encroachment to persist long enough to develop trees larger than [76 cm]…, [and] when creating early seral openings to accomplish vegetation desired conditions." Several scientific studies counter the premise that logging large trees is necessary for reducing inter-tree competition. North et al. (2009 on pages 23–24) noted that "clusters of intermediate to large trees (i.e.,[48 cm] diameter…) are sometimes marked for thinning with the belief that they are overstocked and thinning would reduce moisture stress. Some evidence, however, suggests these groups of large trees may not be moisture stressed by within-group competition because they have deep roots that can access more reliable water sources…." In a long-term study of the large-tree component in treated versus untreated late-seral ponderosa pine forests in the Sierra Nevada, Ritchie et al. (2008) reported lower mortality of large trees60 cm in stands where no*

trees >50 cm had been harvested. These studies should be analyzed and considered with respect to Guideline SG33. Overall, the premise that logging is necessary to create early seral stage habitat, reduce fire risk, increase individual tree vigor, and "restore" forests after fire, must be weighed against the extremely adverse effects of logging to forest ecosystems, disruption of natural ecosystem processes, and degradation of habitat for Spotted Owls, Black-backed Woodpeckers, and other native species inhabiting the LTBMU. Any logging project, no matter how small the trees to be harvested, will adversely impact forest ecosystems through soil disturbance and compaction, disruption of nutrient cycling, damage to residual trees, and enhancement of root pathogens (Stephens and Moghaddas 2005). These adverse impacts must be properly disclosed and analyzed in a revised EIS."

Response:

McKelvey, K. S., and J. D. Johnston. 1992. Historical perspectives on forests of the Sierra Nevada and the Transverse Ranges of Southern California: Forest conditions at the turn of the century. In The California spotted owl: a technical assessment of its current status, technical coordination by J. Verner, K. S. McKelvey, B. R. Noon, R. J. Gutierrez, G. I. Gould Jr., and T. W. Beck, 225–46. General Technical Report GTR-PSW-133. Albany, CA: U.S. Forest Service, Pacific Southwest Research Station.

The reference to large trees is somewhat biased in the Sudworth inventory (1900) cited in the document, because Sudworth didn't measure any trees less than 11 inches diameter and many of the areas without large trees were heavily grazed by sheep. There is no question that there were a greater preponderance of larger trees historically, i.e. prior to wide-scale logging to support the mining at that time. They also do not mention forest health or tree vigor in relation to the historic structure. Also, there is general agreement that due to burning by sheep herders and Native Americans, the forest was not considered pristine.

McKelvey et al. An Overview of Fire in the Sierra Nevada. 1996. In Sierra Nevada Ecosystem Project: Final report to Congress, vol. II, Assessments and scientific basis for management options. Davis: University of California, Centers for Water and Wildland Resources, 1996.

Additional Research by McKelvey indicates that the forest that came back following the Comstock logging was of greater density and greater risk of fire that would be uncharacteristic of the historic fire regime. He states that in the 20th century, the areal extent of fire was greatly reduced. This reduction in fire activity, coupled with the selective harvest of many large pines, produced forests which today are denser, with generally smaller trees, and have higher proportions of white fir and incense cedar than were present historically. The primary conclusion of this paper is that extensive modification of forest structure will be necessary to minimize severe fires in the future.

Franklin and Fites-Kauffman. 1996. Assessment of Late-Successional Forests of the Sierra Nevada. 1996. In Sierra Nevada Ecosystem Project: Final report to Congress, vol. II, Assessments and scientific basis for management options. Davis: University of California, Centers for Water and Wildland Resources, 1996.

This paper examines the current conditions of forest in terms of large tree metrics and as habitat for Late Seral/Old Growth (LSOG) associated species. There is no mention of "vigor" in this assessment. However, the authors suggest that if maintenance of high-quality LS/OG forest ecosystems is adopted as public policy, a program needs to be initiated that will 1) maintain existing high-quality LS/OG forests; 2) restore such conditions where existing LS/OG forests are insufficient to achieve objectives; 3) restore fire as an important process and to reduce risks of catastrophic loss; and 4) restore structural complexity in the matrix. In addition, this assessment relates specific qualitative characteristics that have habitat niches, e.g. use of large snags by particular species within the context of other LSOG characteristics.

The Revised Forest Plan seeks to enhance existing late seral structural classes and the connections of those stands that are in close proximity to one another or to other protected habitats. The S&G 33 has since been refined to better explain the exceptions under which large trees would be cut.

North, Malcolm; Stine, Peter; O'Hara, Kevin; Zielinski, William; Stephens, Scott. 2009. An ecosystem management strategy for Sierran mixed-conifer forests. Gen. Tech. Rep. PSW-GTR-220. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 49 p.

Although I agree that large trees, as the author suggests can be found in groups and the thinning may not necessarily be due to water stress, the authors do go on to say in the same paragraph cited by the commenter that: These groups, however, can be at risk if intermediate and small trees grow within the large tree groups. Thinning these small and intermediate trees will reduce fire laddering.

Ritchie, M. W., B. M. Wing, and T. A. Hamilton. 2008. Stability of the large tree component in treated and untreated late-seral interior ponderosa pine stands. Canadian Journal of Forest Resources, 38: 919-923.

The conclusion of this paper is that untreated stands had elevated levels of mortality of large trees where smaller trees had grown into the understory as compared to treated stands that were thinned. Thus, the question still remains as to what level of thinning would produce the most stable and resilient stands of late seral ponderosa pine. Comparisons in this study are based on two prescriptions: overstory removal and thin from below (retaining all trees greater than 20" DBH with even spacing). In addition, the reference condition the authors are relating to are large trees that are widely spaced, a current condition that is very rare in the interior west.

This reference would appear to support the updated S&G 33 in those instances where stands with trees that become much larger than the ones studied in Ritchie et al (2008). Thinning from below that includes some level of thinning in the co-dominant and dominant positions with the aim of a stable and resilient stand of large trees is an important goal in meeting the desired conditions for forest vegetation, fire & fuels and wildlife habitat.

Stephens, S. L. and J. J. Moghaddas. 2005. Fuel treatment effects on snags and coarse woody debris in a Sierra Nevada mixed conifer forest. Forest Ecology and Management, 214: 53–64

Stephens and Moghaddas (2005) conclude that long-term forest management goals should include the reintroduction of fire as an ecosystem process and creation of forest structures that can incorporate wildfire without tree mortality outside a desired range.

Stephens, S.L., and J. J. Moghaddas. 2005. Experimental fuel treatment impacts on forest structure, potential fire behavior, and predicted tree mortality in a mixed conifer forest. Forest Ecology and Management 215: 21–36.

This paper also supports the goal of treatments aimed at restoring forest structure and reintroducing fire into the ecosystem. There is no mention of the deleterious effects the commenter is associating with neither this article nor the article above.

Stephens, S.L., and J. J. Moghaddas. 2005a. Silvicultural and reserve impact on potential fire behaviour and forest conservation: twenty-five years' experience from Sierra Nevada Mixed conifer forest. Biol. Conserv. 125, 369–379

Alternative views toward restoring fire-excluded forest have been characterized as a debate between ''process restorationists'' – who argue that restoration of key ecological processes, especially fire, will eventually restore natural ecological conditions, and ''structural restorationists'' – who argue that forest structure and fuels must be restored before reintroduction of fire. One caveat to this argument is that where the restoration occurs could influence how the restoration is accomplished. That is, the areas surrounding communities would likely require the structural argument, given the risk of catastrophic fire to the community if fire alone were to be allowed to restore the ecosystem.

The overall conclusion of this study as relates to the objectives analyzed in the EIS is that thinning from below, and old-growth and young-growth reserves were more effective at reducing predicted mortality in trees up to 51 cm DBH when compared with other treatments. There is no mention of the adverse impacts suggested by the commenter.

PC 458: The Forest Service must disclose impacts from logging.

Sample Comment: *"Regardless, it should be explicitly stated that there might be situations where some level of environmental impact will occur due to the nature of the activity needed to accomplish the vegetation management actions needed to reduce the risk of catastrophic wildfire. The impact may occur, even with prescriptions that include best practices, as there may limitations on methods that can be used due to worker safety concerns or feasibility issues. The LTBMU should not be constrained by a Plan and supporting EIS that indicates that regardless of what is needed to address fuel loads, there will not be any environmental impacts."*

Response: Effects of forest vegetation treatments are disclosed in multiple sections of the FEIS. The FEIS does not claim there would be no impacts; rather it states that there would be no significant impacts as defined by NEPA regulations.

PC 459: The Forest Service should manage the forest to produce lumber.

Response: Appendix G (Volume III) is the Timber Suitability analysis, which determined that there are no lands suitable for timber production in the Tahoe Basin.

Determination of where wood is shipped or how the wood is processed is not up to FS staff, but the contractor who bids on the project/contract. Some of the wood removed is suitable for processing into lumber, but there are no lumber mills within 120 mile radius of Lake Tahoe. This makes it difficult for contractors to offset the cost of treatment as the cost of transportation alone is often more than the value of logs on a truck. Values of the main timber species in the Sierra Nevadas have been in decline for more than 20 years and are near all-time lows.

PC 465: The Forest Service should expand opportunities for non-commercial fuelwood collection.

Response: Agree. We would prefer more wood become available to fuelwood gatherers than be burned in piles. Urban lots are often the most accessible areas to fuelwood cutters and treatments often do leave tree lengths (bucked up) for this activity. In project areas where fuel piles are created near access points (roads), fuelwood cutters can also remove useable wood from these piles and re-pile any remaining wood.

Currently, fuelwood is offered to the public and the permits do not sell out in any given year. Some sources of fuelwood are behind closed gates for resource protection and public safety (during operations). Some of the fuelwood generated by our management treatment is decked in large piles at a landing or in the woods but allowing the public to climb on and cut firewood from these piles poses an unacceptable safety hazard. These piles are sometime sold under a commercial fuelwood permit to contractors with appropriate equipment to process these piles safely.

We have used local 8a contractors to remove fuelwood from small areas. These are licensed operators who can meet all contractual obligations (administrative, operational, financial, etc.).

PC 434: The Forest Service should protect and enhance vegetation species diversity.

Response: Agree. None of our alternatives would jeopardize vegetation species diversity. In some instances there are threats to high elevation tree species, e.g. Western white pine and whitebark pine from an exotic pathogen called the white pine blister rust, which weakens and kills the 5-needle pines in the basin. Efforts to conserve these tree species have been underway for more than a decade, including research, monitoring, and testing for and planting of genetically resistant trees. The search for candidate trees and the collection of seed from these trees for testing has been accomplished through cooperative agreements with the Sugar Pine Foundation and the R5 Tree Nursery in Placerville, CA for this purpose.

PC 435: Plan should include a more clearly defined and comprehensive restoration strategy for sugar pine, western white pine, and whitebark pine.

Response: See response to PC 434.

Agree. Separate from the forest plan is the recently signed Sugar Pine Action Plan document for the LTBMU. This action plan outlines means by which sugar pine can be conserved within their seed zones and within the Basin.

Blister rust resistant sugar pines are currently included when deemed appropriate in reforestation efforts, including Penny Pines plantations around the Basin.

Aside from the Sugar Pine Action Plan, the strategies in the Forest Plan favor the five-needle pine species, including rust resistant stock for planting when appropriate. The Forest Silviculturist is responsible for prescribing reforestation as needed on a project-specific basis.

PC 436: The Forest Service should list white pine blister rust as a terrestrial invasive species and should analyze its effects.

Response: As an introduced pathogen that is having detrimental effects on 5-needle pines, we are not sure how such a designation would improve our ability to analyze its effects. Through research and monitoring, we have a good understanding of its rate of spread, extent, and incidence of mortality. In addition we have the Sugar Pine Management Plan for the LTBMU that includes all white pines and tiers to the regional effort through the Placerville Nursery where potentially rust resistant trees can be tested. The Revised Forest Plan includes Strategies related to WPBR.

PC 440: The Forest Service should provide a more specific definition for hazard trees and clarify what level of risk would justify hazard tree removal.

Response: Agree. We have added a more specific explanation of what constitutes a hazard tree in the Glossary – Appendix M of the FEIS. Essentially, a tree identified as a hazard has 1) a high likelihood of failure (i.e. falling tree or portion thereof), and 2) a target that could result in harm to people or property. Not all dead trees for example along a remote seldom used trail would need to be cut/mitigated as dead trees are a feature in the forest. However, a high incidence of dead trees along any trail could prompt some level of hazard tree mitigation.

Specific hazard tree direction for USFS Region 5 comes from: Angwin, P., D. Cluck, P. Zambino, B. Oblinger and W. Woodruff. 2012. Hazard Tree Guidelines for Forest Service Facilities and Roads in the Pacific Southwest Region. FHP-PSW-April 2012 Report RO-12-01.

PC 443: The Forest Service should evaluate any vegetation treatments so that they do not unintentionally harm wildlife habitat, watersheds, soils or other natural resources.

Response: Agree. Typically maintaining or improving wildlife habitat is part of the purpose and need of our projects, even hazardous fuels reduction projects. Potential effects to all resources are evaluated during project specific analysis and appropriate resource protection measures and best management practices are incorporated in the project design to ensure protection of natural resources.

PC 444: The Forest Service should emphasize restoration of native vegetation communities and habitats.

Response: Agree. Lack of forest structural diversity is the greatest threat to the sustainability of the forest around the basin. Restoring this on a landscape scale will emphasize the importance of habitats that will change as a result of restoration management activities.

Restoring some early seral forest from mid seral will allow for natural re-vegetation of pioneer plant communities that are currently at lower than historic levels.

PC 445: The Forest Service should include information on effectiveness of current vegetation management.

There have been several studies completed on the effectiveness of the pre-fire fuels reduction treatments through which the Angora fire burned. These studies all indicate that when fully implemented the treatments altered fire behavior as predicted. These same studies indicate that the fire burning through untreated areas also burned as predicted, a stand replacing crown fire.

The unit has also conducted demonstration projects to determine whether or not mechanized treatments within stream zones can be done without permanent damage. The results indicated that such treatments conducted during the dry season can be done effectively and with little effect to soils or re-vegetation.

Over many years, projects have utilized best management practices to minimize impacts to natural resources during vegetation management activities. The results of evaluating the effectiveness of these are conclusive that there is minimal effect to the resources.

Following an adaptive management strategy the vegetation treatments have become more effective at meeting the purpose and need in each successive project. Managers on the LTBMU have also benefitted from research conducted in the Basin with emphasis on vegetation management activities related to fuels reduction, soils, wildlife habitat, air, and water quality. Some of these are cited in the EIS.

One of the goals in the Revised Forest Plan seeks to restore forest structure at the landscape level. Initiating such restoration treatments has not been done before and results will be assessed over time to determine whether the treatments are truly on a restoration trajectory. The short 20 year timeframe of the forest plan is very small in comparison to the timeframe for restoration to achieve the desired conditions, which could be more than a century.

PC 448: The Forest Service should review their assumptions about historic forest conditions.

Sample Comment: *"…historic forests were far denser than previously assumed, had far more smaller trees and more fir relative to pine, and were largely dominated by mixed-severity and high-severity fire, not low-severity fire (Hessburg et al. 2007, Baker 2012, Williams and Baker 2012a, Williams and Baker 2012b)."*

Response: Partially agree. Not all forest types were characterized by large widely spaced trees. This was more characteristic in the Jeffrey pine and some mixed conifer type stands. The exact conditions would have varied at each stage of stand development with varying degrees of sizes, density, mortality, surface fuels and diversity. Thus, we do not assume all major forest types would have been late seral open with frequent low intensity fire. Some data indicate more open mid to late seral stages may not have fully accounted for the role of aboriginal fires, which are noted in the forest plan. The current conditions, though not limited to the Lake Tahoe Basin, have become considerably more dense and unbalanced with the majority of ages representative of a single cohort that originated from Comstock era logging. Relative to numerous basin-

specific studies, this condition is what is novel. At higher elevations, the area near Angora ridge was characterized by periodic stand replacing fire every couple of hundred years.

PC 449: The Forest Service should reconsider assumptions about resiliency based on recent research.

Sample Comment: "*The DEIS (p. 3-232) describes forest resiliency as the ability of the system to return from major natural disturbance, such as higher-severity fire. However, the DEIS fails to disclose the fact that recent research finds generally vigorous natural conifer regeneration in high-severity fire patches—even in large high-severity fire patches—indicating high ecosystem resilience, contrary to the assumptions of the DEIS (Donato et al. 2006, Shatford et al. 2007, Donato et al. 2009, Collins et al. 2011)."*

Response: Agree. More is coming from the climate change literature. When it becomes more available and applicable, we will consider alteration to our current planned guidance.

Wider spacing would be inherently more resilient to fire in pine types. Also, there is more contemporary research that supports the desired conditions for the major forest types in the Basin, e.g. North et al 2012 on fire history of riparian zones. A fundamental fact about drought tolerance is also part of resiliency. That is, trees require sufficient water and nutrients to grow and that the greater the space available to capture these resources and grow, the better capable of fending off bark beetle attacks and maintaining vigor.

In this EIS, resiliency assumptions are more generally applied across the basin. Specific instances of disturbance, e.g. fire, would be considered on a site-specific basis and project design would incorporate research available at that time. Assumptions about resiliency are based in part on historic conditions as a stepping stone towards what the disturbance regimes will be in the future and in part on fundamental ecological and forestry principles related to fire behavior and water cycles.

Donato, D. C., J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, and B. E. Law. 2006. Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk. www.sciencexpress.org / 5 January 2006 / Page 1 / 10.1126/science.1122855.

This brief does not explain the resilience of post-fire forest. It only portrays a post-fire logging activity without putting into context the broader goals of post-fire restoration. The EIS and Forest Plan Revision consider more elements to be addressed by an IDT following wildfire.

Shatford, J.P.A., D.E. Hibbs, and K.J. Puettmann. 2007. Conifer Regeneration after Forest Fire in the Klamath-Siskiyous: How Much, How Soon? Journal of Forestry, April/May 2007: 139-146.

This article refers to natural pine regeneration following stand replacing fire and that it can take very long periods of time and will be highly variable. They conclude that even with information from 20 years of forest dynamics, successional development can not be precisely predicted for specific locations. This highlights the challenge to integrate a wide range of forest conditions across a landscape to meet the diverse set of goals and needs imposed by society

Donato, D.C., Fontaine, J.B., Campbell, J.L., Robinson, W.D., Kauffman, J.B. and Law, B.E. 2009. Conifer regeneration in stand-replacement portions of a large mixed-severity wildfire in the Klamath-Siskiyou Mountains. Can. J. For. Res. 39, 823–838.

The lighter seed and more vigorous growth of Douglas fir in this post-fire situation are quite different from heavier Jeffrey pine seed and its slower initial growth. Given the large area burned, the mosaic of live trees across the burn area, the mesic growing conditions, and the distances traveled by Douglas fir seed, we would expect to see more vigorous establishment in that area for that forest type. Resilience in this case stems from the adaptation of Douglas fir to seed in after fire, since it does not resist fire very well. In the case of Jeffrey pine, its strategy is to resist fire and to regenerate from seed *in situ*.

Collins, B. M., R. G. Everett, and S. L. Stephens. 2011. Impacts of fire exclusion and recent managed fire on forest structure in old growth Sierra Nevada mixed-conifer forests. Ecosphere 2(4):art51.

The authors note that their results are based on forests that have not undergone the extensive harvesting that has occurred throughout much of the Sierra Nevada, including the Lake Tahoe Basin. Given that the increases in density of 30.5 to 61.0 cm dbh trees far outweighs that for the larger size classes, and that there are concerns over the numbers of large trees where extensive harvesting has taken place, restoration based projects in mixed conifer forests similar to those studied here are likely justified in focusing on retaining trees .61.0 cm dbh. This would appear to support the premise of forest restoration in the EIS/Forest Plan Revision.

As noted previously, exceptions to removing trees larger than 30 inches DBH have been clarified to reflect the situations in which they would be removed.

PC 450: The Forest Service should explain why removing trees is necessary for aspen restoration.

Response: Agree. We can further explain aspen growth requirements. Many of the aspen stands that were inventoried throughout the Basin exhibit severe conifer encroachment into the aspen and in many instances are overtopping them, causing aspen mortality. Given that aspen is clonal in its reproduction (reproduces from root clumps), the stands that exist are all that we have. Therefore, we aim to restore aspen as part of other projects, incorporating such treatments into overall project objectives.

Aspen require open growing conditions as they are shade-intolerant. They are able to take advantage of openings in the forest that result from fire or other mortality event by rapid growth to capture the site. However, shade-tolerant species (fir) and other shade-intolerant species (pines), in the absence of fire, eventually out-compete aspen.

PC 451: The Forest Service needs to clarify the assumptions about tree mortality from beetles and the rationale for the need to reduce stand densities.

Response: The assumptions are nothing new to forestry. These are well supported in the literature. The question is really about whether or not bark beetle outbreaks are acceptable or not. Given the extensiveness of overly dense forest conditions, and the objectives for scenic

quality in the Basin, beetle outbreaks and the tremendous tree mortality associated with them are not acceptable. Therefore, thinning the forest stands below maximum stand density index for each of the major forest types on a periodic basis will lower the risk of outbreaks and improve resiliency of the stands to withstand natural levels of beetle attack.

In the FEIS the difference between alternatives B, C and E is the amount of thinning per acre (which is highest in Alternative C), not the number of acres treated over time.

PC 452: Plan should clarify how the Plan considers the ecological role of beetles, disease, and fire in forest ecology.

Response: The plan seeks to reduce beetle risk and fire effects that are outside of the natural and/or historic ranges of variability. Objectives aim to reduce forest stand densities from conditions that do not represent natural conditions and would result in extraordinary outbreaks and catastrophic fire.

Forest vegetation management options reflected in the forest plan follow precepts of ecosystem-based management. Given that there are no lands suitable for timber production in the Basin, the practice of forestry is aimed at objectives other than timber, meaning wildlife, recreation, scenic, or other resource objective. After public safety has been addressed, snags and down wood that are created by natural processes are a desirable component in the forest. Additional considerations are covered in the forest plan when retaining snags.

PC 487: The Forest Service should consider carbon sequestration in planning forest management activities.

Response: Recent research can be conflicting over whether utilization of woody biomass in energy producing facilities is a net carbon offset or not. As research conflicts are resolved we expect Forest Service policy regarding carbon sequestration in planning to become more specific.

PC 502: The Forest Service should clarify desired conditions for vegetation.

Response: DC statements for forest structure, composition and health are broad and reflect conditions that may take a century or more to achieve. Forest changes, given the long length of time needed for trees to grow to large sizes, mean that as managers we cannot correct the issues of forest sustainability and health in 15-20 years.

The purpose of the vegetation DCs is to establish the goal towards which we intend to establish a long-term trajectory.

PC 503: The Forest Service should utilize thinning treatments that attempt to mimic natural processes.

Response: Agree. The prescribed treatments are designed as surrogates for what natural processes would alter within the forest. We use an ecosystem-based approach to thinning that is reflective of bark beetle caused mortality and low intensity prescribed fire that reflects the role of fire as well.

There is a study site at the Blodgett Forest in Georgetown, CA is part of a national study called the Fire & Fire Surrogate Study, to understand how management treatments can best mimic natural processes in different forest ecosystems across the country. The prescribed treatments in the LTBMU have benefited from these studies at the Blodgett Forest.

PC 505: The Forest Service should limit fuels reduction to understory removal.

Response: Partly agree that the reduction of surface fuels and small understory, shade-tolerant trees and shrubs are needed to alter fire behavior in and around communities. However, aerial continuity of canopy fuels is also part of the equation when developing treatments. Canopy fires generally need some surface fuels to in order to continue burning in the crowns, however, canopy fires that enter a stand with treated surface fuels can continue to burn in the canopy when those fuels are high in density.

In addition to fuels reduction to alter fire behavior, canopy thinning also is prescribed to improve resiliency of residual trees to bark beetle attack and overall vigor. A complete set of treatments includes the use of prescribed fire once all other treatments have been conducted. The prescribed fire further reduces the fuel loading and provides benefits to the residual vegetation including a more receptive seed bed for understory re-vegetation.

Interpretive Services, Conservation Education, and Visitor Services

PC 165: Forest Service should use environmental education and interpretation to instill conservation values in visitors and thus reduce impacts.

Response: All alternatives propose using environmental education and interpretation to communicate conservation values to the public. This remains an important mission for the LTBMU. As stated in the Revised Forest Plan - Part 1 Vision Section for Interpretation: "The mission of the Interpretive Services program is to provide support and inspire high quality interpretation that instills respect and appreciation for the natural and cultural heritage of public and private lands and foster their protection and stewardship through time."

PC 166: Forest Service should require recreation special use permittees to provide environmental education and interpretation.

Response: Thank you for your suggestion. Currently, the Forest Service does not have a regulation in place that requires special use permit holders to provide environmental education and interpretation. The LTBMU, however, encourages permit holders to offer environmental education and interpretation services.

Lands Program

PC 164: The Forest Service should transfer management of NFS lands to the States and counties.

Response: The Forest Service is responsible for management of all NFS lands. However, the Forest Service also considers transfer of NFS lands that will reduce fragmentation of public

lands, increase public access to NFS lands and Lake Tahoe shoreline, and protect important natural and heritage resources.

PC 413: The Forest Service should consolidate its ownership of urban subdivision lots.

Response: The consolidation of the ownership of urban lots is emphasized in the plan, especially with Nevada State lands and the California Tahoe Conservancy. One of the specific lands strategies of the Revised Forest Plan states, "Seek opportunities for land adjustments with State and Local governments that consolidate ownership and improve management of urban lots". In addition a second lands strategy continues the option of transferring urban lots to the grantees in erosion control projects when the improvements encumber more than 25% of the lot. However, in the FEIS, in section 3.4.13.2 under Land Acquisition and Land Adjustment Program, it is explained that land adjustments of urban lots with Nevada State Lands and CTC are preferred as they are both land management agencies with similar management objectives for their land in the Lake Tahoe Basin, and that such land adjustments offer the best opportunity to improve overall management and present the least concern for future monitoring of the deed restriction required by the Santini/Burton Act. Nothing in the plan or FEIS precludes continuing transfers to local governments. As stated in the same section of the FEIS, discussions on urban lot land adjustments are active and ongoing. Although the Santini/Burton Act did authorize transfers of lands acquired under the Act to local and state governments, it did not authorize the transfer to private ownership. This plan cannot create the authority to do so.

PC 429: The Forest Service should manage lands surrounding Santini-Burton parcels as backcountry.

Sample Comments: "*The Draft Plan provides for preserving the environmental quality and public recreational use of Santini-Burton Urban Forest Parcels (SB Parcels) with management emphasis on protecting watershed conditions and community open space. Such classification is closely related to backcountry. Forest Service lands surrounding SB Parcels should be presumed as meriting backcountry designation unless other factors predominate."*

Response: The vast majority of Santini/Burton Parcels are small urban subdivision lots in developed subdivisions. They are usually adjacent to developed residential properties. They are in designated urban areas, and do not meet any of the criteria for backcountry designation. In the Revised Forest Plan, Program Strategy for Santini/Burton Acquired Lands/Urban Forest Parcels, it states, "The Forest Service manages urban forest parcels as undeveloped open space for the purpose of preserving the hydrologic function of sensitive lands and conserving natural forest conditions within the urban setting". The first strategy listed on the same page states, "Manage urban forest as undeveloped parcels that provide open space and dispersed recreation opportunity". So, although the lots are protected, they do not have wildland or backcounty characteristics and require more intense management due to all of the adjacent private properties.

There are larger properties that were acquired under the Santini/Burton Act that are not in the urban areas, such as High Meadows. Under Lands Standards and Guidelines in the Forest Plan, it states, "For Planning purposes, acquired properties shall be included in the management area in which they are located". Thus, if Santini/Burton properties are located in an area with a backcountry designation, they will be managed as such.

In the Management Areas Section of the Revised Forest Plan the Santini-Burton and Urban Forest Parcels sections have been updated to explain the differences in management between these lands. Lands in the urban areas would be managed differently than those farther into the forest.

PC 462: The Forest Service should work to resolve conflicts between special use permittees using the same lands.

Sample Comment: *"Angel's Roost and East Peak should be removed from the list of communication sites shown in Map 8 of the Draft Plan."*

Response: The referenced map is of the existing designated communication sites on the LTBMU at the time of the Revised Forest Plan. In accordance with the FS Handbook, FSH 2709.11-90.3.1, Communication sites must be designated in a National Environmental Policy Act (NEPA) decision document. Angel's Roost and East Peak have been designated communications sites since at least the time of the 1988 Forest Plan. The two sites were designated as their locations were needed to provide communication services to the South Shore area for the public safety radio net, the Forest Service radio system, private two-way radio and Heavenly Ski Area's operations. As long as these two sites are used for communication purposes, they cannot be undesignated.

The same FS Handbook at FSH 2709.11-30.3.2. states: All designated communication sites must have a current communication site management plan that is consistent with the applicable LMP or with any separate NEPA Decision Document. The communication site management plan must provide site specific direction and guidance to Forest Service personnel, the communications site users, and the public. This direction is intended to ensure that the needs of all users are considered and avoid conflicts between their uses. There is a current site management plan for Angel's Roost that limits additional uses of the site to those that are consistent with the use of the area for a ski area. In addition, when the current cellular provider was authorized at Angel's Roost, a NEPA decision document determined that the new use was consistent with the ski area use. A new communication site management plan is in process for East Peak that will also protect the interests of Heavenly Mountain Resort.

Recreation

PC 323: The Forest Service should expand recreation infrastructure and opportunities as needed and as budget allows.

Response: Some expansion of infrastructure is allowed under each of the alternatives. The FEIS analyzes five alternatives, each of which provides for a specific degree of construction, site modification, redevelopment, and/or decommissioning of developed recreation site infrastructure. Alternatives A, B, C, and E allow for a range of development between 5 and 15 percent in developed recreation opportunities and facilities. In comparison, Alternative D allows for a potential 15 percent decrease in developed recreation infrastructure in response to resource restoration objectives. All alternatives propose to provide a wide variety of recreation opportunities by focusing on deferred maintenance or modification of existing facilities to help

achieve accessibility and sustainability of recreation opportunities in the Lake Tahoe Basin. Future site modification and/or redevelopment under any of the alternatives is subject to future funding levels.

PC 95: The Forest Service should maintain a mix of recreation opportunities while protecting resources.

Response: The USFS manages NFS Lands for multiple uses. In some cases uses are in conflict so specific guidelines are put in place to provide for these multiple uses while protecting and conserving habitat and species. The Revised Forest Plan, consistent with all alternatives, has multiple Standards and Guidelines in place that are intended to protect natural resources while providing both developed and dispersed recreation opportunities.

PC 41: The Forest Service should carefully protect the few remaining old growth forests, large trees and streamside zones while not limiting the current use and access.

Response: Perpetuating and promoting existing late seral stages is a forest strategy as stated in the Revised Forest Plan Section 2.1 - Forest Vegetation, Fuels, and Fire Management Program Strategy: "Perpetuate and promote existing late seral stages in each project area and throughout the broader landscape , with primary emphasis on protecting/enhancing late seral depended wildlife habitat".

The Forest Service also encourages continued and improved access to public lands as described in Chapter 1 of the Revised Forest Plan, Public Access DC89: "Encourage additional access where lawful and feasible to high-quality natural areas and shorezones consistent with desired resource conditions." Also in Section 2.2 Social and Economic Sustainability, the Access Strategy section discusses the importance to "Coordinate management activities and projects to minimize impacts to public access, and recreational experience".

PC 144: The Forest Service should address human and dog waste at Kiva beach.

Response: The Forest Plan is strategic in nature and does not attempt to prescribe detailed management direction to cover every possible situation. It does not contain specific project and activity decisions; these must be accomplished in a separate, project-level decision and are subject to environmental analysis and public scoping under the National Environmental Policy Act (NEPA).

The Forest Service encourages responsible dog owners to pick up after their pets. Proper disposal of human and dog waste is enforced under 36 CFR 261.11(d). In support of that, flush toilets and dog waste stations are provided at the Kiva Picnic Area and portable toilets and dog waste stations are provided at Tallac Point.

PC 182: The Forest Service should utilize additional fees as needed to provide additional staff and maintain access.

PC 475: The Forest Service should implement a parking pass program if fees are charged for new parking areas.

PC 471: The Forest Service should not charge fees for parking.

Sample Comment: *"Additional fees to keep these areas open and to cover the costs of additional Rangers and Sheriffs is a welcome trade off. As long as these funds are not used against us and raided by others!"*

Response: Decisions regarding the establishment and allocation of fees on NFS lands are outside the scope of this planning effort. The authority to charge recreation-related fees on NFS lands is delegated to the U.S. Forest Service by Congress. In addition, existing regulation, law, and policy determines how the Forest Service may allocate fees collected on NFS lands. The delivery of recreation programs (e.g., access and facility upkeep) as well as the ability to increase additional law enforcement patrols is dependent on future funding levels.

PC 45: The Forest Service should designate additional lands restricted to non-motorized use.

Additional lands restricted to non-motorized use are evaluated in Alternatives C, D, and E. If wilderness were recommended and designated by Congress, areas proposed for wilderness in Alternatives C and D would be restricted to non-motorized use year-round. Alternative E, the FEIS Preferred Alternative adds 3,800 acres to the Backcountry Management Area; while winter motorized use would still be allowed there, summer motorized use would be prohibited.

PC 44: Motorized and non-motorized uses should be separated.

Sample Comment: "The plan should commit to creating substantial areas which are closed to motor vehicles summer and winter so that these areas can be enjoyed by hikers and cross country skiers"

Response: Motorized and non-motorized uses are presently separated in many areas on the LTBMU. While all areas on the LTBMU are open to non-motorized recreation (e.g., cross-country skiing), OSVs are restricted to designated areas (52% of LTBMU lands). Summer motorized use is limited to one area (the "Sandpit") and to designated routes.

PC 84: The Forest Service should prevent "overuse" of East Shore beaches that degrades the environment and experience.

Response: Strategies to prevent impacts to natural resources from recreation activities are present in all Alternatives. The Revised Forest Plan Part 2 - Strategies, includes the following Public Access strategy – "Manage recreation activities to avoid or mitigate environmental degradation in sensitive environments to ensure continued access".

In an effort to prevent environmental degradation of East Shore Beaches, the Forest Service has provided parking lots, trails, toilets, and trash bins, and facility maintenance. Within the past ten years, new toilet units have been installed at Secret Cove and Logan Shoals, new bear proof trash

bins have replaced all open trash cans, and the trail system has been upgraded to improve pedestrian circulation and to minimize soil erosion. These issues will continue to be addressed at the project level.

PC 95: The Forest Service should maintain a mix of recreation opportunities while protecting resources.

Response: The FEIS analyzes a range of alternatives, each of which provides for a mix of recreation opportunities while protecting resources with standards and guidelines in the Revised Forest Plan. In the Preferred Alternative (Alternative E), this objective is supported by DC 84 in Section 1.2. DC 84 specifically states, "A spectrum of high quality recreational opportunities are provided, while Lake Tahoe Basin's natural setting as an outstanding recreation destination is maintained." In addition to this Desired Condition, there are numerous standards and guidelines as well as laws, regulations and policies which support this concept.

PC 161: The Forest Service should make a priority of providing public access.

Response: Providing public access is one of our highest priorities. At the same time one of our biggest challenges is to provide opportunities to each user group. The FEIS analyzes a range of alternatives, each of which provides for a mix of recreation opportunities while maintaining public access. Under the Preferred Alternative (Alternative E), the Forest Service encourages continued and improved access to public lands as described in Part 1, DC 89: "Encourage additional access where lawful and feasible to high-quality natural areas and shorezones consistent with desired resource conditions." In addition, Section 2.2 of the Revised Forest Plan, Social and Economic Sustainability, discusses the importance to " Coordinate management activities and projects to minimize impacts to public access, and recreational experience."

PC 163: The Forest Service should provide a range of recreation opportunities including motorized.

Response: The FEIS analyzes a range of alternatives, each of which provides for a mix of recreation opportunities. All alternatives provide for motorized and non-motorized uses, including hiking, biking, skiing, equestrian use, over snow vehicle use, and off-highway vehicle use.

PC 179: The Forest Service should stop charging fees to use public lands.

Response: The authority to charge recreation-related fees on NFS lands is delegated to the U.S. Forest Service by Congress.

Decisions regarding the establishment of recreation fees on NFS lands are outside the scope of this planning effort.

The Forest Service offers a wide variety of recreation opportunities on the LTBMU that are accessible to the full spectrum of socioeconomic levels, including low-income households. These opportunities include:

- Dispersed camping;

- Dispersed recreation activities such as hiking, mountain biking, and cross-country skiing;
- No or low fee beach and trailhead access; and
- The availability of season passes to popular recreation sites that provide discounts for frequent visitors.

The Revised Forest Plan will continue to support this objective as indicated in DC 84: "A spectrum of high quality recreational opportunities are provided, while Lake Tahoe Basin's natural setting as an outstanding recreation destination is maintained."

PC 273: The Forest Service should consider feasibility of expanding outfitter-guide (fishing) concessions on the Forest.

Response: Outfitter guide special use permits will continue to be issued under all alternatives in the FEIS. New special use permits, including guided fishing services, may be granted in the future. As with any special use authorization, the decision to issue a new permit would be made on a project-level basis and subject to environmental review and public comment under the National Environmental Policy Act (NEPA).

PC 305: The Forest Service should consider the economic benefits of human powered recreation.

PC 306: The Forest Service should consider the value of recreation to the local economy and the community at large.

Response: Socioeconomic resources were analyzed in Chapter 3 of the FEIS. This section has been expanded to include recreation's contribution to the regional economy by the addition of the National Visitor Use Monitoring (NVUM) data as part of the socioeconomic analysis. NVUM data includes human-powered (non-motorized) activities such as hiking, skiing, and biking. By continuing to provide a diversity of recreation opportunities the LTBMU contributes to the overall economic health of the local economy.

PC 312: The Forest Service should allow camping on beaches to accommodate boat users and provide appropriate facilities for overnight use.

Response: In order to protect natural resources in the Basin, dispersed camping opportunities are re-evaluated and adjusted regularly via the forest order process. Strategies for considering undeveloped camping in the future are provided in the Revised Forest Plan, Section 2.2 Recreation Opportunities Strategies "Provide opportunities for general forest undeveloped camping where applicable and where it meets management goals. Periodically review and update the forest camping order based on public health and safety, fire prevention goals, and resource protection and management capabilities" (e.g. provisions for sanitation, garbage collection, and noise management)."

Decisions regarding the forest camping order are made at the project level and subject to separate environmental review and public scoping under the National Environmental Protection Act (NEPA).

PC 316: The Forest Service should restrict horseback riding.

Response: The decision to restrict equestrian use of trails on the LTBMU is made at the project level and subject to public scoping and separate environmental review under NEPA. At present, the majority of trails on the LTBMU are open to equestrian use; however, the maintenance level and primitive condition of some routes, as well as lack of available stock trailer parking and access at some trailheads limit accessibility to equestrian users on certain trails.

The two special use permit holders who currently offer horseback riding opportunities on NFS lands are subject to additional restrictions per the terms and conditions of their special use permits. These terms and conditions include designation of a system of trails available for use by the permit holder as well as restrictions on season of operation and types of use.

PC 318: The Forest Service should adequately maintain their recreation improvements, and modernize and enhance them as needed.

Response: As described in the FEIS, Section 3.4.19.2, Recreation Development, the LTBMU has focused on eliminating deferred maintenance, modernization, meeting universal accessibility standards, and improving services and the quality of its recreation programs to enhance visitor experience. This trend is likely to continue for the life of the Forest Plan. In addition, Part 2.2 of the Revised Forest Plan identifies achieving ecological, social, and economic sustainability of recreation sites as a key component of the LTBMU recreation program strategy. Alternatives A, B, C, and E provide for varying degrees of additional developed recreation infrastructure, including parking and trails. Alternative D would most likely result in the greatest consolidation of recreation infrastructure as it describes potentially reducing recreation opportunities by up to 15%. Under all alternatives, however, the degree and extent to which these improvements are accomplished (or consolidated) are subject to future funding levels. Please see Section 3.4.1 Access and Travel Management in the FEIS for a discussion on the effects of each alternative on access and parking.

PC 319: The Forest Service should continue to provide diverse recreation opportunities for future generations.

Response: The Forest Service strives to provide diverse recreation opportunities as described in the Revised Forest Plan Desired Conditions and Strategies. Alternatives A, B, C, and E will provide more opportunities to provide diverse recreation opportunities while Alternative D may provide fewer if some recreation sites are removed or reduced in size (See DEIS Chapter 3.4.17 Recreation).

PC 324: The Forest Service should evaluate numbers of quiet recreationists compared to motorized users. Plan should allow for changes and trends and adapt to current needs.

PC 380: The Forest Service should recognize NVUM methodology does not provide an accurate and complete picture of recreation uses.

Sample Comment: *"The Lake Tahoe Basin Forest Plan Revision fails to protect Lake Tahoe and its outstanding natural resources in the winter. The Plan does not address the need to manage snowmobile use and does not plan for winter recreation. I would also encourage you to more closely evaluate the visitor use numbers, and their accuracy. I fear that the USFS is basing management decisions on information that is either outdated or inaccurate. The categories for*

the NVUM seem to not account for snowshoeing and backcountry skiing, which are highly popular activities and continue to gain in popularity. And please create a feasible and sustainable balance of designated land that creates suitable areas for everyone to enjoy their respective activities."

Response: The Forest Service monitors use via the National Visitor Use Monitoring (NVUM) survey program (Appendix A); Section 1.4 of the 2010 NVUM Survey discusses the limitations of the survey. While backcountry skiing and snowshoeing are not specific categories, they are accounted for by other categories such as cross-country skiing and Other Non-motorized activities. Here on the LTBMU, the NVUM surveys suggest that motorized and non-motorized recreation uses are very popular. While many commenters have expressed dissatisfaction, according to NVUM the majority of both motorized and non-motorized users have indicated that they are satisfied with their experience. As stated in the Revised Forest Plan Recreation Opportunities Strategy section, "As recreation trends and users change, recreation facilities and opportunities are adapted to provide intended user experience while being compatible with management goals." However, the plan does not divide the use proportionately by number of users.

Section 2.2 of the Revised Forest Plan has been updated to include a strategy that provides for managing recreational user conflicts

PC 325: The Forest Service should manage recreation activities to avoid impacting water quality.

Response: The desired conditions, strategies, objectives, standards, and guidelines for Water Quality are described in the Revised Forest Plan. They apply to all projects and activities and are designed to protect, maintain, and improve watershed health and water quality. Effects to water quality from recreation activities are described in Chapter 3 of the FEIS and are effectively mitigated through the use of BMPs.

PC 326: The Forest Service should continue working to resolve recreation conflicts.

Response: Section 2.2 of the Revised Forest Plan has been updated to express our current strategy for managing recreational user conflicts.

PC 328: The Forest Service should include enhancement of year-round world class recreation opportunities as a goal.

Response: A strategy for addressing future recreation opportunities, which would include year-round uses, has been identified in Section 2.2 of the Revised Forest Plan, "As recreation trends and users change, recreation facilities and opportunities are adapted to provide intended user experience while being compatible with management goals." This strategy is further supported by Desired Conditions. Opportunities to enhance or improve existing recreation facilities and services will be driven by available funding over the life of the Forest Plan.

PC 331: The Forest Service should consider improving access to accommodate growing activities such as paddling.

Response: Maintaining and enhancing public access opportunities to Lake Tahoe shorelines and NFS lands is a primary strategy on the LTBMU (Revised Forest Plan 2.2 Social and Economic Sustainability, Access Strategies).

Decisions on site specific improvements to accommodate paddling and other recreation activities would be accomplished at the project level subject to public scoping and separate environmental review under NEPA.

PC 334: The Forest Service should provide increased recreation opportunities of all types to meet demands.

Sample Comment: *"The LTBMU has a substantial capacity to provide for more motorized (including additional parking), non-motorized, and back country recreation experiences. There is more than ample wilderness and inventoried roadless to assure that LTBMU can meet recreation demand for solitude and related back country experiences."*

Response: The LTBMU offers recreational opportunities for a variety of uses, including motorized, non-motorized and backcountry. The alternatives present various mixes of opportunities. With 5.7 million visitors per year, there are no un-utilized areas to increase opportunities; only trade-offs are available, as presented in the alternatives. None of the alternatives however will be able to meet all future recreation demands during peak use seasons (See EIS Chapter 3 - Recreation). While capacity of individual sites may be increased, the resulting user satisfaction may be decreased.

PC 335: The Forest Service should plan for recreation activities during all seasons and all the recreational purposes that might become available during the lifetime of the plan.

Response: Suitable uses for each of the four management areas have been identified in Table 5 in Part 2 of the Revised Forest Plan. These uses include both summer- and winter-based recreation activities.

Although none of the alternatives analyzed in the FEIS preclude consideration of new or changing recreational uses over the life of the Forest Plan, we cannot predict what new uses might arise over the life of the plan. For example, when the 1988 Plan was published, mountain biking was a new activity and no one knew how popular it would become.

PC 336: The Forest Service should plan for the increasing visitor use from Nevada.

Response: The FEIS analyzes five alternatives, each of which considered recreation visitor growth trends as discussed in Chapter 3, Section 3.4.19.2. The EIS acknowledges that visitation from our major market areas (200 mile radius from Lake Tahoe) to the Lake Tahoe Basin is projected to increase over the life of the plan (approximately 1.4% annually). Alternatives A, B C and E all provide for varying degrees of expansion in developed recreation opportunities for the Forest Service to respond to this projected increase in demand. In comparison, Alternative D would potentially reduce existing developed recreation infrastructure by up to 15%. None of the alternatives, however, will be able to meet all future recreation demands during our peak use seasons (See EIS Chapter 3.4.17 - Recreation).

PC 345: The Forest Service should prohibit construction of additional piers on NFS lands.

Sample Comment: *"I ask: how do jet skis and power boats on the lake, additional buoys and piers, snowmobile traffic and ATV's assist Lake Tahoe in remaining clear and beautiful? I can accept that we have made compromises in the past and must fulfill our end of the deal. But, we must not allow further damage to occur."*

Response: The LTBMU only manages National Forest System lands adjacent to Lake Tahoe; it does not have jurisdiction over activities occurring on the Lake (jet skis and power boats). Construction of piers is a site specific decision that is outside the scope of this planning effort, and would be subject to regulation by the TRPA.

As stated in the FEIS, NFS lands managed by the LTBMU will be guided by multiple use objectives and subject to applicable laws, regulations, and policies.

PC 349: The Forest Service should require the Best Available Technology for all motorized use in the Basin.

Response: Although motor vehicle regulations are under the jurisdictions of the states of Nevada and California and not the LTBMU, the Forest Service, in cooperation with State and Federal agencies, encourages off-highway motor vehicle recreationists to use equipment with the Best Available Technology.

PC 355: The Forest Service should keep ORV trails open if they accept green sticker funds.

Response: The Off-highway Vehicle (OHV) "Green Sticker" program is managed by the California Department of Parks and Recreation Off-Highway Motor Vehicle Recreation Division. Decisions regarding the use of funds the LTBMU receives from the State of California from the "Green Sticker" program are subject to the State's OHV funding regulations and are made at the project level (e.g., law enforcement, maintenance, signage, etc.) and are therefore outside the scope of this planning effort.

PC 364: The Forest Service should put a 'QR' code on signs that would link to the LTBMU maps showing the allowed/disallowed areas.

Response: None of the alternatives analyzed in the FEIS preclude consideration of new technologies for managing NFS lands on the LTBMU. The decision whether or not to include Quick Response (QR) codes on Forest Service signs is an administrative one and therefore outside the scope of this planning effort. Currently, the LTBMU includes QR codes on some new signs when old ones are replaced. Thank you for your suggestion.

PC 374: The Forest Service should provide some beach areas that are closed to motorized watercraft.

Response: The FEIS analyzed for a range of recreation opportunities under all alternatives. Beaches currently closed to motorized boats include Pope, Baldwin, Nevada, Meeks, and William Kent. The Revised Forest Plan does not; however, preclude the future designation of additional non-motorized beaches. This decision would be made at the project level and subject

to public scoping and environmental review under NEPA. Additionally, the Forest Service manages land directly adjacent to Lake Tahoe but does not manage the lake. Any future changes in regulations regarding use on the lake are not under the authority of the USFS.

PC 376: The Forest Service should provide road access in Dardanelles and Freel Peak IRAs to accommodate search and rescue vehicles, due to increased recreation use.

Response: Search and rescue teams are generally allowed on all areas of the national forest dependent on the urgent needs of the team. Search and rescue access is achieved through multiple means, including by trail, road, over snow vehicles, and helicopter.

Alternatives B, C, D and E propose to manage Backcountry Management Areas as described in the Revised Forest Plan Part 2.3 - Management Areas and Suitable Uses. Construction of roads is not a suitable use in Backcountry Management Areas.

PC 381: The Forest Service should not place restrictions on any type of recreation use.

Response: Not all recreation uses are appropriate on all NFS lands. Some recreation uses are prohibited by law in some areas. For example motorized uses are not allowed in congressionally designated Wilderness Areas in order to maintain the wilderness character of the area.

PC 382: The Forest Service should explain how the "fair share concept" is implemented.

Sample Comment: *"Motorized recreational vehicles are not receiving their "fair share" because traditionally the LTBMU has listened more attentively to environmental groups rather than the citizens of the basin."*

Response: The "fair share" concept was developed by TRPA and first introduced in the Agency's inaugural Regional Plan (1982).

The "fair share" concept was introduced during a period of rapid development and was intended to ensure that public recreation opportunities would continue to be provided – that a "fair share" of the recreation opportunities would be available to the public. The fair share concept is not about providing different types of uses.

PC 388: The Forest Service should provide direction for use of fixed anchors for climbing, especially in designated wilderness areas.

PC 390: The Forest Service should include best management practices for climbing access and cultural resource protection.

Response: Climbing activities in the Basin will be managed to provide a diversity of climbing opportunities while preserving and protecting natural resources and values. The climbing community will be engaged in cooperative stewardship when dealing with resource concerns. Stewardship will involve education and outreach, following protocols to minimize resource impacts, and complying with temporary or permanent closures of areas to protect resource values.

Outside of wilderness areas, climbing activities on the LTBMU will continue to be subject to existing Forest Orders and may be subject to future restrictions in order to protect natural and cultural resources. Climbing activities in wilderness areas will be managed according to national policy or as prescribed in specific wilderness plans.

Decisions regarding restrictions on fixed anchors are accomplished at the project level through a forest order, and thereby subject to public scoping and separate environmental review under NEPA.

PC 395: The Forest Service should allow dispersed camping in more areas.

Response: The potential for more dispersed camping opportunities is addressed in the Revised Forest Plan in Part 2 Recreation Opportunities Strategies section: "Provide opportunities for general forest undeveloped camping where applicable and where it meets management goals. Periodically review and update the forest camping order based on public health and safety, fire prevention goals, and resource protection and management capabilities."

The designation of additional dispersed camping areas on the LTBMU would be accomplished at the project level, subject to public scoping and separate environmental review under NEPA. None of the alternatives analyzed in the FEIS preclude future designation of dispersed camping areas.

PC 398: The Forest Service should maintain opportunities for human-powered recreation.

Response: All alternatives ensure that the majority of NFS lands in the Lake Tahoe Basin are open for human powered recreation opportunities.

PC 399: The Forest Service should recognize the need to provide areas for more affordable recreation opportunities.

Response: The Forest Service offers a wide variety of recreation opportunities on the LTBMU that are accessible to the full spectrum of socioeconomic levels, including low-income households. These opportunities include:

- Dispersed camping;
- Dispersed recreation activities such as hiking, mountain biking, and cross-country skiing;
- No or low fee beach and trailhead access; and
- The availability of season passes to popular recreation sites that provide discounts for frequent visitors.

PC 401: The Forest Service should include management of non-motorized watercraft activities and the Lake Tahoe Water Trail in the Forest Plan and EIS.

Sample Comment: *The Conservancy recommends that LTBMU include non-motorized watercraft activities and the Lake Tahoe Water Trail in the discussion of public access in the Forest Plan and EIS. By acknowledging the role LTBMU lands play in the viability of non-motorized activities in the Forest Plan, the needs of this large user group can be better recognized in sustainable recreation system planning and investment..*

Response: None of the alternatives specifically preclude consideration of accommodating activities (such as dispersed camping and the development of additional facilities) on NFS lands in the future in support of the Lake Tahoe Water Trail. Specific proposals for facilities or changes in management to support the Lake Tahoe Water Trail could be considered at the project level. Since the LTBMU does not have jurisdiction over Lake Tahoe, inclusion of management direction for the Lake Tahoe Water Trail is not appropriate for inclusion in the Forest Plan.

PC 403: The Forest Service should include equestrian uses in the Forest Plan.

Sample Comments: *"Also, as an equestrian, I have been saddened by the new trails that have been created that are downright dangerous to horses and riders. What's up with putting STAIRS on a back country trail? The Van Sickle trail is supposed to be a horse-friendly trail. However, it's too narrow, has blind corners where mountain bike encounters are extremely dangerous, and the water crossing is impossible. PLEASE take into consideration the safety of equestrians when developing new trails. The same goes for sections of the Star Lake Connector from High Meadows; and of course the Cold Creek Trail is NOT ride-able at all."*

"The loss of roadside parking would make equine activities nearly impossible without alternative parking areas for truck and trailer. Currently the only horse parking facility, located at Bay View is unmarked, unmaintained, and unusable for equine do to cars parked in the area original designated for horse trailers and corrals…. The LTBMU appears to have decided not to include the equine community in there multi-use management concept."

"In your Dispersed Recreational Use area of the Forest Plan, you do NOT mention Horseback riding as a recreation in the basin?"

Response: The FEIS analyzes five alternatives in detail, each of which provides for a range of recreation opportunities, including equestrian use. Site-specific considerations for equestrians, including trail construction and maintenance, parking, and overnight camping facilities, are accomplished at the project-level rather than at the Forest Plan level. Project design is subject to and often influenced by public comment. As described in Section 3.4.19 - Recreation of the FEIS, the LTBMU will continue to focus primarily on the redevelopment of existing sites and facilities by reducing or eliminating deferred maintenance or modifying existing facilities to help achieve accessibility and sustainability of recreation opportunities in the Lake Tahoe Basin. Opportunities to enhance or improve existing recreation facilities and services—including those designed for equestrian use—will be driven by available funding over the life of the Forest Plan. Future consideration of the addition of equestrian facilities would be subject to environmental review and public scoping under the NEPA.

Please see Section 3.4.1- Access and Travel Management of the FEIS for a discussion of the effects of each alternative on parking and access. Designation of additional equestrian parking would be accomplished at the project level subject to public scoping and separate environmental analysis under the NEPA.

Under 36 CFR 212 Subpart A, the Forest Service assigns Trail Class ratings to each of its trails. Trails are maintained to the standards identified in Forest Service Handbook 2309.18, "Trails Management Handbook," for each Trail Class. The ability of the Forest Service to maintain these trail standards year to year is dependent on available funding.

The omission of horseback riding as a dispersed summer recreation activity in Chapter 3 (Table 3-1 and Section 3.4.19 - Recreation" section) was an oversight. While equestrian use was analyzed as a recreation activity under all of the alternatives, Chapter 3 has been updated to more clearly identify this as a dispersed summer recreation opportunity. Equestrian use is also recognized in the Suitable Uses section of Part 2 in the Revised Plan.

PC 404: The Forest Service should establish horse camping areas.

Response: Thank you for your suggestion. The designation of additional equestrian camping areas and stock trailer parking on the LTBMU would be accomplished at the project level, subject to public scoping and separate environmental review under NEPA. None of the alternatives analyzed in the FEIS preclude future designation of equestrian camping areas and trailer parking.

PC 410: The Forest Service should require that dogs be on a leash.

Response: The Forest Service enforces leash regulations in developed recreation sites via existing Code of Federal Regulations (CFR) 261.16(j). Outside developed recreation sites, leash laws are established and enforced by county ordinances unless restricted by a Forest Order.

PC 419: The Forest Service should recommend the Lake Tahoe Basin for National Recreation Area status.

Response: The LTBMU, though not a *National Recreation Area*, is already considered a National Special Recreation Management Area in its current designation as a *National Management Emphasis Area* as described in FSM 2371.01. Please see excerpts from Public Law 106-506 (Lake Tahoe Restoration Act) below which established Lake Tahoe as National Management Emphasis Area.

> **(1) Lake Tahoe, one of the largest, deepest, and clearest lakes in the world, has a cobalt blue color, a unique alpine setting, and remarkable water clarity, and is recognized nationally and worldwide as a natural resource of special significance;**
>
> **(2)in addition to being a scenic and ecological treasure, Lake Tahoe is one of the outstanding recreational resources of the United States, offering skiing, water sports, biking, camping, and hiking to millions of visitors each year, and contributing significantly to the economies of California, Nevada, and the United States;**
>
> **(3)the economy in the Lake Tahoe basin is dependent on the protection and restoration of the natural beauty and recreation opportunities in the area;**

PC 430: The Forest Service should consider apparent conflicts between management area map and ROS map.

Sample Comment: *"The lands designated semi-primitive non-motorized appear to be heavily restricted by buffer zones around motorized routes. For the reasons stated above, such buffer zones are not appropriate in the LTBMU because they simply take too much of the available recreational land."*

Response: The ROS map (Revised Forest Plan Map 9) was updated consistent with the criteria for establishing ROS classes. Adjacency to highways is one of the criteria considered.

PC 42: The Forest Service should expand developed recreation.

Sample Comment: *"I am in favor of enhancing recreational opportunities in our public lands, including improving trail-heads, providing parking areas and comfort facilities, improving and expanding sno-parks, and increasing environmentally friendly camping areas."*

"Lake Tahoe's smaller outdoor and recreation based business can also be helped with a thoughtful look at granting those special use permit areas the ability to update and expand their facilities as needed to insure they also have the opportunity to provide great services to visitors and locals alike."

"I think Oneidas should be a snow park with parking, garbage cans, and bathrooms for snowmobilers and mountain bikers. It is a perfect spot to serve many different groups."

Response: Each of the five FEIS alternatives, provides for a specific degree of construction, site modification, redevelopment, and/or decommissioning of developed recreation site infrastructure. Expansion beyond these limits would require a Forest Plan amendment. As described in FEIS Section 3.4.19.2 Overview of the Affected Environment for Recreation Resources, the LTBMU offers a wide variety of developed recreation sites that provide different levels of user comfort and convenience. These facilities have been constructed to offer sustainable recreation opportunities, protect resources, and otherwise manage visitor activities in different outdoor settings. All alternatives continue to support this objective by focusing on deferred maintenance or modification of existing facilities to help achieve accessibility and sustainability of recreation opportunities in the Lake Tahoe Basin. Future site modification and/or redevelopment under any of the alternatives is subject to future funding levels.

Thank you for your suggestion regarding Oneidas Road. Designation of developed recreation sites, such as the establishment of additional parking and restroom facilities, must be accomplished in a project-level decision and would be subject to separate environmental analysis and public scoping under the NEPA. Therefore this comment is outside the scope of this planning effort.

PC 75: The Forest Service should not expand developed areas.

Sample Comment: *"Most importantly, the few remaining undamaged wild areas we still have in the Tahoe Basin need to be preserved, for their value to wildlife, people, and water and air quality. There should be no expansion of developed areas, and all roadless areas should remain so"*.

"There is WAY TOO MUCH accommodation of human structural change and not nearly enough for the preservation of the gorgeous natural scenery and environment all those people claim they come to experience."

Response: The FEIS analyzes five alternatives in detail, each of which provides for a specific degree of construction, site modification, redevelopment, and/or decommissioning of developed recreation site infrastructure. Alternative D would address your comment and could potentially result in a 15% decrease in developed recreation opportunities and infrastructure on the LTBMU.

Current management of Inventoried Roadless Areas would continue; these areas would comprise the majority of land in the Backcountry Management Area. Wilderness and Backcountry

Management Areas would remain undeveloped under all alternatives, and these two management areas together range from 45% of LTBMU lands in Alternative B to 52% of LTBMU lands in Alternative D (assuming that recommended Wilderness areas were subsequently designated by Congress). Development is also extremely limited on Santini-Burton Urban Forest Parcels, which comprise an additional 9% of LTBMU lands.

OSV

Overall

PC 59: The Forest Plan should address winter recreation.

PC 321: The Forest Service should work to resolve the conflicts associated with winter recreation.

PC 327: The Forest Service should manage winter recreation conflict by providing shared and single use trails and areas.

PC 332: The Forest Service should balance motorized and non-motorized winter uses; one group should not take precedence over the other.

PC 360: The Forest Service should evaluate and plan for winter recreation uses in more detail.

PC 368: The Forest Service should ensure the Plan and EIS are in compliance with E.O 11644 and E.O.11989.

PC 402: The Forest Service should designate separate trailheads for motorized and non-motorized winter use.

PC 431: The Forest Service should do winter travel management as soon as possible.

Con OSV

PC 120: The Forest Service should close more areas to OSV use.

PC 157: Forest Service should decrease the area snowmobiles are allowed to use.

PC 123: The Forest Service should step up enforcement to ensure that OSV's adhere to current restrictions and stay in designated areas and marked routes.

PC 357: The Forest Service should improve enforcement of snowmobile closures.

PC 143: The Forest Service should consider the effects of OSV use on natural resources and the social, economic, aesthetic, historic, and cultural effects.

PC 347: The Forest Service should limit snowmobile use to designated routes and should not allow open riding areas.

PC 370: The Forest Service should eliminate OSV use in the Tahoe Basin.

PC 392: The Forest Service should close the Mt. Watson road (Fiberboard Freeway) to OSVs.

PC 387: The Forest Service should work to minimize conflicts between commercial OSV operations and human-powered recreationists.

PC 375: The Forest Service should eliminate OSV use in Tahoe meadow, around Incline Lake, and adjacent to the Mt Rose Wilderness.

PC 361: The Forest Service should designate routes and areas for OHV and OSV use to limit impacts.

PC 309: The Forest Service should close the area between Hwy 267 and Hwy 50, including the Mt Rose corridor, to motorized winter use.

PC 353: The Forest Service should recognize that snowmobiling is a high-impact form of recreation and is incompatible with many other forms of recreation.

PC 359: The Forest Service should provide some areas that are closed to OSV use.

PC 322: The Forest Service should not open more areas to OSV use.

Pro OSV

PC 30: The Forest Service should maintain current OSV opportunities.

PC 314: The Forest Service should allow OSV use of bike trails.

PC 317: The Forest Service should provide areas that are closed to non-motorized winter recreation and non-mechanized summer recreation.

PC 333: The Forest Service should increase the areas open to OSV.

PC 386: The Forest Service should open all NFS lands to OSV use

Sample Comment: *"In closing, I would like to say that the continued practice of closing areas to Snowmobilers to keep Cross Country Skiers happy, is like teaching your children to not to play with others, no discipline makes for a spoiled and greedy society. So the next time you choose to close an area, close it to Cross Country Skiing!!"*

"Mixing motorized and non-motorized winter users creates an unsafe environment for pedestrian users."

"The Draft Plan fails to do winter travel management, defining areas open and closed to motorized vehicles in winter, as required by the Forest Service planning rule, Executive Orders and the Tahoe Regional Planning Agency."

Response: A large volume of the comments received surrounded the issue of winter Over Snow Vehicle (OSV) use. The term OSV commonly refers to snowmobiles but includes any other motorized vehicle designed to travel over snow. Comments ranged from one extreme to the other regarding OSV use, some wanting OSVs banned completely from NFS lands (PC 370) and others wanting all NFS lands open to their use(PC 386). While there is some variation in each

comment based on personal experience, awareness of the actual contents of the Plan, and interpretation by others, there were fundamentally two positions.

One group of commenters expressed that the areas currently designated for OSV use should be substantially reduced or eliminated entirely (PCs 120,157, 322, 347, 370, and 359). This group advocated non-motorized (human powered) winter recreation, such as cross-country skiing and snowshoeing. They commented that OSV use and non-motorized uses are not compatible because the noise, crowding, smell, sight and tracks left in the snow from OSVs are offensive and ruin their ability to experience the serenity and beauty of winter landscapes (PC 353). This group believes that OSVs are responsible for environmental damage to the soil, vegetation, water and air (PC143). In particular they recommended that the area from CA Hwy 267 and US Hwy 50 at Spooner Summit be identified as a "quiet quadrant", free of OSVs (PC 309). The area at Tahoe Meadows, near the summit of the Mt. Rose Highway (NV Hwy 431), was frequently mentioned as an area of conflict (PC 309). This area is popular with both OSVs and non-motorized users. Additionally, since the area is immediately adjacent to a major state highway there is also a lot of general snowplay (saucers, sleds, kids playing in the snow). Some of this area is open to OSVs and some is closed and a portion of this area is on the Humboldt-Toiyabe National Forest and outside the jurisdiction of the LTBMU.

Offering an opposing view, there was a group of commenters that supported OSV recreation and advocated the retention or expansion of existing areas open to OSV (PCs 30, 314, 333, and 386). Generally this group does not mind the presence of non-motorized users and so does not describe the issue so much as a conflict. This group's major concern stems from the loss of areas to ride OSVs outside the Lake Tahoe Basin which creates the perception that there are fewer and fewer areas available to them. This increases the desire to keep areas open at Lake Tahoe. This group also was against any recommendations for additions to the National Wilderness Preservation System (proposed in Alternatives C and D), since these areas would be closed to all motor vehicle use if Congress were to act on the recommendations.

The arguments presented by both groups actually have many positions in common. Both groups suggest that the Forest Service should do what is "fair". Of course what is "fair" is a matter of perspective. The non-motorized group suggests that since they significantly outnumber the OSV users, they should have a greater proportion of the LTBMU to recreate free of OSVs. The OSV group also suggest the amount of use by OSVs justifies more area be opened to them. The OSV group believes they are being slowly squeezed out of public lands and further loss of areas open to OSVs is not reasonable and is unwarranted. Both groups suggest they are being "discriminated" against by public land managers and have a "right" to use public lands. One of the frequently mentioned problems, by both groups is the availability of parking especially in areas of high use.

Both groups point to public lands and the LTBMU as the only place that provides the space necessary for the recreation experience they desire. For winter recreation, an elevation high enough to have consistent snow pack is necessary, which does limit the area available. The non-motorized group talks about the need for large expanses of land to find "quiet and peaceful surroundings, a needed respite for our mechanized and noisy world." The OSV group portrays the need to use large expanses of land because of the distances their machines can travel. Both groups extoll the unique beauty of Lake Tahoe.

Both groups suggest their use is on the upswing and cite their contribution to the local and regional economy based on the equipment and supplies they buy. They both believe their groups are major economic forces.

The separation of these groups is not absolute, as there are some that enjoy both aspects of winter recreation along with downhill skiing at a resort. For example, there are now backcountry skiers who ride along on OSVs to gain quick access farther into the backcountry for remote skiing.

Overall there were notable misconceptions about the current situation. The non-motorized group incorrectly portrayed that there were areas closed or unavailable to them. Currently 100% of the LTBMU is open to non-motorized use. Approximately 52% is open to OSVs, which means 48% of LTBMU lands are free of OSVs. Additionally there are over 19,600 acres of state lands (CA State Parks, CA Tahoe Conservancy, and NV State Parks) open to non-motorized use but closed to OSV use. Cumulatively this increases the area in the Lake Tahoe Basin that is free of OSVs by about 12%.

The 1982 Planning Rule (as well as Executive Orders 11644 and 11989)(PC 368) requires of the Forest Service that "Off-road vehicle use shall be planned and implemented to protect land and other resources, promote public safety and minimize conflicts with other uses of the National Forest System lands." (§219.22 (g)). The Plan meets this requirement by reaffirming the current designation of areas open to OSV use that was contained in the 1988 LTBMU Forest Plan (PCs 59, 360, 321, 360, 431). There is no duty in the regulations to reevaluate OSV use upon revision of a plan. The Plan satisfies the regulatory requirement because OSV use is "planned and implemented" on the entire LTBMU and has been continuously in force for the past twenty-five years, and will continue to be, per this Plan.

Commenters from both sides argue that the current designations are unfair (PCs 120, 317, 332). As mentioned above, that is a matter of perspective. Both groups wanted the Forest Service to conduct further studies on the number of people that participated in non-motorized vs. OSV activities, believing the numbers would trigger changes in their favor. This Plan, and in general the Forest Service, does not manage any use by strict numerical proportions of use or demand. There are many examples where management is not gauged by use or demand. For example, the Plan does not even begin to meet the demand for overnight camping in the summer because the tradeoff of having significant increases in developed land is not acceptable. In the winter environment, developed ski areas do not occupy a portion of the landscape in proportion to the high use that occurs. (Downhill skiing accounts for 62.5% of the total annual use while cross country skiing and snowmobiling account for 9.8% and 6.2%, respectively.)

In an argument similar to proportional management based on the number of users, both sides argue that not all lands available to them are suitable for their use due to access, terrain, parking, and conflicts with other users, and that strict percentages are misleading. Both suggest that more precise mapping would lead to a redistribution of the designated OSV areas when combined with use numbers.

The Plan is based on Desired Conditions (DCs 84-87) that promote a range of recreational opportunities within the context of a rustic outdoor experience appropriate to National Forest System lands. On a small area such as the LTBMU (only about 155,000 acres) with such a high

use and many different kinds of use, there is simply not the area available to separate all users in a manner that gives them all exactly the part of the landscape they want to use (PCs 327, 402). In fulfillment of the Desired Conditions presented in the Plan, several major winter activities are accommodated on the LTBMU: downhill resort skiing, cross-country skiing and snowshoeing, OSV use and snowplay. They are provided in proportions that allow participants full enjoyment at least somewhere within the boundaries of the LTBMU. There was no agreement amongst commenters as to what the appropriate proportion of each activity should be and no one proposed a systematic, science based method for developing an appropriate and fair allocation.

The NVUM results for 2010 show that 98% of visitors to the LTBMU were "somewhat satisfied" or "very satisfied" with their recreational experience. The national target is 85% (FEIS Ch. 3, Sec 3.4.17). The Plan does serve the majority of users by providing a very diverse and high quality recreational experience, which has led to a very large, satisfied group of users.

Commenters advocated many site specific alterations to the existing OSV designations, from minor boundary changes to expansion or elimination of large areas (PCs 392, 375, 309). The recreation program as defined by the Desired Conditions, Strategies, Objectives and Standards/Guidelines promotes a diverse range of recreational opportunities consistent with Forest Service policy. Regulations do not require, and the FEIS does not reopen all the decisions that over the years have created the current existing situation. Consequently, existing recreation developments and use designations are included in the FEIS as existing facilities and/or on-going activities. The Plan recognizes and affirms the presence of features such as Camp Richardson Resort, Heavenly Mountain Resort, Camp Concord, and recreation residences, to name a few. The FEIS also affirms past management decisions such as the prohibition of rock climbing on Cave Rock. The retention of the summer off-highway vehicle designation and the OSV designations are included and analyzed as part of the existing situation.

Many commenters suggested that the current OSV designations do not "minimize" conflict as required by the regulations (PCs 387, 321). The regulations do not require the elimination of all conflicts. The Plan does meet this part of the regulation. The designated areas open to OSVs are well known and have been in place for 25 years and involve only 52% of the LTBMU. By providing a range of recreational opportunities over the entire LTBMU, users are afforded choices to recreate in high use areas or find solitude in lesser traveled areas. Based on the extremely high satisfaction ratings from the 2010 NVUM survey conflict is not so pervasive as to ruin many visitors' experience.

Some non-motorized commenters suggest that OSVs damage the environment (PC 143, 361). The FEIS analyses the on-going use of OSVs on the LTBMU based on the current use designations and finds there is no significant impact to the resources. (FEIS Chapter 3, Sections 3.4.2 Air Quality, 3.4.3 Aquatic Wildlife Habitat and Species, 3.4.20 Soils Resource, 3.4.21 Terrestrial Wildlife Habitat and Species, 3.4.23 Water Quality). Therefore the Plan meets the requirement "...to protect land and other resources,"

PC 308: The Forest Service should manage winter motorized use areas the same as summer motorized use areas, and should prohibit all motorized use in IRAs.

Response: Summer and winter uses have different effects and provide different kinds of recreation opportunities and are thus treated differently in the Draft Plan and FEIS.

Future changes to designated motor vehicle routes and areas will be accomplished at the project level subject to public scoping and separate environmental review under NEPA.

Please see also the response to PC 15 and PC 383.

PC 352: The Forest Service should ban two stroke engines on snowmobiles.

Response: The Forest Service will continue to support the use of over snow vehicles using industry developed Best Available Technology (BAT) by our special use permit holders, and encourage the general public to also use over snow vehicles with BAT. All OSVs should be compliant with existing Federal emissions standards.

PC 384: The Forest Service should limit snowmobiles to developed areas except for search and rescue.

Response: The use of OSVs by search and rescue teams is generally allowed on all acres of the national forest dependent on the urgent needs of the team. OSV use is considered a suitable recreation use in designated portions of Backcountry and General Conservation Management Areas of the LTBMU with specific restrictions depending on applicable legal, policy or permitting regulations (see Revised Forest Plan, Part 2, Table 5 - Suitable Uses and Management Activities by Management Area and response to comment 370).

PC 385: The Forest Service should restrict motorized vehicle use to electric powered vehicles.

Response: In cooperation with State and Federal resource agencies, the Forest Service encourages the use of the Best Available Technology (BAT) off-highway motor vehicles and snowmobiles. Technology for Electric powered OHVs and OSVs is not currently available.

PC 417: The Forest Service should eliminate the snowmobile concession on Brockway Summit.

Response: As with any special use authorization, the decision to issue or terminate a special use permit is made at the project level and subject to environmental review and public scoping under the National Environmental Protection Act (NEPA). Therefore, the recommendation to terminate the existing snowmobile outfitter guide authorization at Brockway Summit is outside the scope of this planning effort.

All special use proposals are reviewed for compatibility with public use of National Forest System (NFS) lands. Per 36 CFR 251.54 and Forest Service Handbook 2709.11, all proposals are subject to screening criteria, which include but are not limited to:

- Use is consistent with law, regulations, orders, policies of NFS lands, and other federal laws and is applicable with state and local health and sanitation laws.
- Use is consistent or can be consistent with Forest Land Management Plans.
- Use does not pose serious or substantial risk to public health and safety.

- Use does not unreasonably conflict or interfere with administrative use, other scheduled or existing authorized uses, or adjacent non-NFS lands.

PC 311: The Forest Service should designate snowmobile routes for the first 1/2 mile in mixed use areas to separate motorized and non-motorized use.

PC 338: The Forest Service should consider allowing motorized and non-motorized winter uses on alternate days.

Response: The Revised Forest Plan does not prohibit these strategies, and they could be implemented at a future time based on site-specific analyses and decisions.

PC 321: The Forest Service should work to resolve the conflicts associated with winter recreation.

Sample Comments: "*The LTBMU has not done it's diligence in managing conflict with winter recreation. Instead the LTBMU has sided with extreme environmentalist groups such as the Snowlands Network and the Winter Wildlands. These extreme environmentalist organizations spread fear of lawsuits in federal court if their agenda is not supported by the LTBMU. Also, I have work with these organizations and although some of their complaints have validity, many are fabricated or exaggerated. The LTBMU should be working to bring us together, find the truth and resolve the issues. The forest is for all to enjoy."*

"I am concerned with how the Lake Tahoe Basin Forest Plan Revision will protect Lake Tahoe and its winter resources. Please manage snowmobile use including the noise, smell, and danger of conflicts between snowmobilers and skiers. One snowmobile impacts the recreation experience on many acres for self-propelled enthusiasts who are enhancing self-health."
Response: Section 2.2 of the Revised Forest Plan has been updated to include a strategy that provides for managing recreational user conflicts, which includes those associated with winter recreation activities.

The current designations of areas open and closed to OSV use were based on input from a Working Group of representatives from ORV groups, conservation organizations, interested citizens, public agencies, and Forest Service specialists in the 1970s. The LTBMU initiated a collaborative process to resolve winter recreation conflicts in 2011; this process is ongoing.

PC 365: The Forest Service should designate areas as closed unless open to snowmobiles.

Response: Map 18 in the Revised Forest Plan designates areas as open to snowmobiles.

PC 123: The Forest Service should step up enforcement to ensure that OSVs adhere to current restrictions and stay in designated areas and marked routes.

PC 357: The Forest Service should improve enforcement of snowmobile closures.

In all alternatives, OSV activities in the Basin are managed via the areas that are open and closed to OSV use as currently designated and are enforced through the existing Federal Code of Regulations. The Forest Service provides information to the public about the rules and regulations governing OHV and OSV use and enforces them throughout the year within our available resources.

PC 367: The Forest Service should re-analyze areas open to OSV use before allowing additional OSV outfitter guide permits or expanding or renewing existing permits.

Response: As with any special use authorization, the decision to issue, renew, or terminate a special use permit is made at the project level, is required to be consistent with the Forest Plan, and subject to environmental review and public scoping under the NEPA. Consistency with the Forest Plan requires that any OSV special use permits would be limited to designated areas where OSV use is allowed.

PC 369: The Forest Service should recognize the value of powder snow as a natural resource.

Response: Map 18 of the Revised Forest Plan depicts the many areas in the basin where motorized and non-motorized recreationists can choose to enjoy the unique recreation opportunities provided by new snowfall.

PC 411: The Forest Service should provide more marked trails for skiers.

Response: Thank you for your suggestion. Installation of additional trail signage for dispersed winter recreation activities is an administrative action and would be accomplished at the project level rather than at the Forest Plan level.

PC 484: The Forest Service should analyze the effects of climate change on recreation opportunities.

Response: A discussion of ways in which climate change may impact recreation opportunities can be found in Chapter 3 of the FEIS, Recreation – Consequences Related to Climate Change, and in the Climate Change Sustainable Operations section of Chapter 3.

PC 350: The Forest Service should evaluate the contribution of snowmobile use to the Vehicle Miles Traveled Threshold (TRPA).

Response: Vehicle Miles Traveled (VMT) is a proxy measure of traffic congestion, the production of nitrates, and entrainment of soil sediments from roads (TRPA, Threshold Evaluation Report, 2011) and does not apply to OSVs.

Ski Areas and Slopes

PC 340: The Forest Service should limit ski area development and expansion to existing permit areas.

PC 96: The Forest Service should not expand ski resorts.

Response: The FEIS has been updated to clarify that the LRMP makes no changes to the existing ski area special use permit boundaries. However, the FEIS anticipates additional development within the existing permit boundaries to varying degrees in Alternatives A, B, C, and E, and less development within the existing permit boundaries in Alternative D. Ski area expansion beyond the existing special use permit boundary may be considered if consistent with the Management Area and Suitable Uses table identified in the Revised Forest Plan (Table 5), but would require a Forest Plan amendment.

PC 339: The Forest Service should include plan direction for year round use at ski areas.

PC 320: The Forest Service should be flexible in expanding recreational opportunities to other seasons due to changing user preferences, technology, seasons of use, and other issues affecting recreational preferences at ski areas not only because of climate change.

PC 343: The Forest Service should include plan direction for non-motorized summer use at ski areas.

Response: The desired condition for ski areas is to deliver services in response to identified need and management objectives. The Revised Forest Plan does not require that the identified need or management objective be limited to climate change. Rather, the Recreation Program Strategy describes that the recreation program must have the ability to adapt to changing recreation preferences including user experiences and trends (Revised Forest Plan Section 2.2 and Suitable Uses section (2.3)).

The FEIS anticipates additional development within existing ski area permit boundaries in Alternatives A, B, C and E in support of year round activities. Additional development may be in response to either winter or summer recreation uses as authorized by law, regulation, and agency policy including but not limited to the Ski Area Recreation Opportunity Enhancement Act of 2011. (FEIS Chapter 3, Section 3.4.19).

PC 341: The Forest Service should allow expansion of ski area permit boundaries.

Response: The FEIS has been updated to clarify that the LRMP makes no changes to the existing ski area special use permit boundaries. However, the FEIS anticipates additional development within the existing boundaries in Alternatives A, B, C and E, and less development within the existing boundaries in Alternative D. Ski area expansion beyond the existing special use permit boundary may be considered if consistent with the Management Area and Suitable Uses table identified in the Revised Forest Plan (Table 5), but would require a Forest Plan amendment.

PC 346: The Forest Service should ensure that ski area development minimizes impacts to natural resources.

Response: Under 36 CFR 251.56, all special use authorizations, which include ski area development, must include terms and conditions to minimize impacts to natural resources. As development activities are proposed, they are subject to public scoping and separate environmental review under NEPA. During this project level review, mitigations and design features are incorporated as necessary to protect natural resources.

PC 463: The Forest Service should present the basis for determining that there is/was no need to consider the recreation residence sites for other public uses, and establish criteria for continuing a process for monitoring and analyzing the need for retrieving the privately used lands for public benefits in the Forest Plan.

Response: Recreation residence permits were renewed in 2010 for a period of 20 years. The analysis completed for permit reissuance included the determination that the current use of these sites for recreation residences is still appropriate.

Recreation residences are an authorized use of National Forest System lands under CFR 251.50. Direction on administration of recreation residence special use permits—including Forest Service policy on determining whether recreation residence permits may be issued for a new term at existing lots (i.e., permit continuance)—is outlined in Forest Service Manual (FSM) 2721.23e, "Recreation Residence Continuance."

PC 481: The Forest Service should clarify use of maintenance agreements with permittees.

Response: Thank you for your comment. The Revised Forest Plan has been revised to include a better description of what is meant by "maintenance agreements."

Wilderness

PC 1: The Forest Service should not recommend additional wilderness.

Response: The FEIS analyzes a range of alternatives, each of which provides for a mix of recreation opportunities. In Alternatives A, B, and E (FEIS Preferred Alternative), no additional wilderness areas are recommended.

PC 6: The Forest Service should decrease or eliminate all wilderness.

Sample Comment: *"PLEASE OPEN ALL CURRENT EXISTING CLOSED AREAS TO RECREATION. I am against all 7(seven) of the proposed wilderness designation areas. In these areas with such designation the land becomes useless to us its owners not only for recreation but also with devastating consequences in the event of fire or other natural or human caused disasters."*

Response: Alternatives A, B, and E do not recommend additional Wilderness areas. Elimination of designated wilderness areas can only be accomplished by an Act of Congress. Therefore, this comment is outside the scope of this planning effort.

Two areas were proposed for Wilderness recommendation (in Alternatives C and D). LTBMU lands include parts of 3 designated Wilderness areas (Desolation, Granite Chief, and Mt. Rose).

PC 62: The Forest Service should recommend additional wilderness.

Sample Comment: "*Wilderness designation will preserve roadless areas and the quiet and undisturbed regions surrounding Lake Tahoe. It will protect sensitive and delicate habitat from the severe impacts caused by mountain bikes and OHV's. There are literally hundreds of miles of dirt and primitive roads in the Lake Tahoe area. Plenty for the most avid mountain biker and four-wheeler. Sacrificing roadless lands is unacceptable."*

"More wilderness is a good thing, not bad. We need to protect the area surrounding Lake Tahoe and it's basin now, because if it isn't done now it may be too late."

Response: Alternatives C and D recommend designation of additional wilderness areas on the LTBMU (see Chapter 2.3 of the FEIS). Final designation of wilderness areas can only be accomplished by an Act of Congress.

Current protections for Inventoried Roadless Areas will be maintained through the activity and use restrictions in the Backcountry Management Area.

PC 94: The Forest Service should evaluate resource concerns in areas with potential for wilderness designation and address these concerns rather than waiting for designation to protect these lands.

PC 428: The Forest Service should consider other means of protecting resource values than wilderness designation.

Response: Lands are recommended for Wilderness designation because they exhibit wilderness characteristics (Volume III, Appendix C). In addition, lands that might be eligible for Wilderness designation are primarily located in the Backcountry Management Area, which restricts activities and uses to protect natural resources (Revised Forest Plan, Part 2, Management Area and Suitability sections).

As outlined in Part 3 of the Revised Forest Plan, standards and guidelines have been developed for all resource areas to address resource concerns. As described in Part 3 Design Criteria of the Revised Forest Plan, these standards and guidelines are applied together with applicable law, regulation and policy in order to provide sideboards for subsequent projects and activities to help achieve desired conditions and objectives forest-wide. Standards and guidelines set mandatory limits and constraints on management activities in order to ensure resource protection.

PC 103: The Forest Service should retain and protect current wilderness areas.

Response: As stated in Section 2.2 of the FEIS, all alternatives analyzed in the FEIS maintain current wilderness area designations within the LTBMU.

PC 405: The Forest Service should prohibit dogs in designated wilderness areas.

Response: The Wilderness Act does not prohibit dogs in wilderness areas. Leash laws, which apply in wilderness areas, are established and enforced by county ordinances unless restricted by a Forest Order.

PC 416: The Forest Service should better explain their wilderness evaluation criteria and improve the analysis.

Response: The "Evaluation of Areas for Potential Wilderness" is found in Appendix C (Volume III) of the Revised Forest Plan. The criteria used in the evaluation are explained in the Introduction. The evaluation followed the national guidance provided in the Forest Service Handbook 1909.12, Chapter 70.

PC 418: The Forest Service should adjust boundaries for potential wilderness areas to avoid recreation use conflicts.

Response: The boundaries of the existing Dardanelles and Freel Inventoried Roadless Areas were used in the wilderness analysis. If these recommended areas are advanced for wilderness designation by Congress, final boundary determinations will be addressed at that time.

PC 420: The Forest Service should prepare a joint wilderness recommendation for the entire Dardanelles roadless area along with the two adjacent forests.

Response: Alternatives C and D both recommend wilderness designation for the Dardanelles Inventoried Roadless Area within the LTBMU boundaries. At this time, the adjacent Forests have not expressed interest in recommending Wilderness in this area. All five alternatives preserve the opportunity to recommend additional Wilderness in the future.

PC 421: The Forest Service should manage lands under their current designation and not as wilderness.

Sample Comment: *"I strongly object to managing any public non-Wilderness lands as if they were already designated Wilderness. This creates de-facto new Wilderness and does not manage the lands under the proper, legal management designation."*

Response: Lands proposed for Wilderness recommendation are in the Backcountry MA and would continue to be managed as such until such time as they are designated by Congress.

PC 433: The Forest Service should address how additional wilderness conflicts with the City of South Lake Tahoe's business/marketing plan.

Sample Comment: *"Another area of concern for the commission is that restricting some users from the proposed wilderness areas is in direct conflict with the City of South Lake Tahoe's business/marketing plan to increase outdoor recreation based tourism. Has the loss of revenue to the City of Lake Tahoe been taken into account? My understanding is that through the Pathway 2007 plan local agencies would be working together for the mutual benefit of the stake holders in the Tahoe basin."*

Response: The consequences of Wilderness recommendation are disclosed in the FEIS sections 3.4.19 and 3.4.27 (recreation and wilderness). We do not believe that Wilderness recommendation conflicts with the City of South Lake Tahoe's business/marketing plan.

PC 89: The Forest Service should complete an evaluation of areas suitable for wilderness designation.

Response: As part of the Forest Plan Revision process, the LTBMU undertook an evaluation of areas for potential wilderness designation. This evaluation can be found in Appendix C of the Revised Forest Plan (Volume III).

PC 168: Forest Service should provide more protections for wilderness in the Plan.

Response: All wilderness areas in the LTBMU are managed in accordance to the standards and policy's established in the 1964 Wilderness Act. Section 3.3 - Designated Special Areas Standards and Guidelines in the Revised Forest Plan, provides guidelines and other sources of management information for the Desolation, Granite Chief and Mt. Rose Wilderness Areas.

Scenic Resources

PC 47: The Forest Service should maintain the scenic quality and consider the unique qualities of the Tahoe Basin in management decisions.

Response: The Revised Forest Plan establishes management strategies for maintaining scenic quality and enhancing valued scenic attributes (including the unique visual qualities of the Tahoe Basin). The Revised Plan requires that future management activities meet or exceed identified minimum scenic integrity objectives. The environmental consequences of each alternative are discussed with respect to scenic integrity in FEIS Section 3.4.20 – Scenic Resources. Evaluation of scenic stability is also discussed in the context of perpetuating valued scenic attributes into the future.

PC 86: The Forest Service should seek the return of that park-like quality which the pioneers experienced as they traversed the Sierra Nevada.

Response: The Revised Forest Plan identifies forest vegetation desired conditions that approximate conditions prior to the area's Comstock-era logging. A diversity of vegetation conditions, including those composed of larger trees with canopy covers that are generally more open than those seen today is a desired condition.

PC 342: The Forest Service should revise Scenic integrity and Stability ratings to reflect reality of the built environment inherent in ski areas.

Response: The Minimum Scenic Integrity Objectives (MSIOs) have been updated to more accurately reflect desired landscape conditions within developed ski areas and are displayed on Map #10 of the Revised Forest Plan. Existing scenic integrity in many of these areas is identified as "low" and the MSIO has been revised from "high" to "moderate" to reflect anticipated improvements in scenic integrity over the Plan Period.

The Minimum Scenic Stability, Map #11 of the Revised Forest Plan has been correctly re-named as "Existing Scenic Integrity". Scenic resource strategies continue to manage for achieving "high" scenic stability on a project-by-project basis over the Plan Period.

PC 461: The Forest Service should recognize the need for local direction to supplement the Built Environment Image Guide in order to provide guidance better suited to an alpine environment.

Response: The Revised Forest Plan requires that LTBMU activities related to the built environment be consistent with the Built Environment Image Guide and its North Pacific Province, which includes the central and northern Sierra Nevada. While the BEIG is general in its direction, the Forest Plan Standards and Guidelines further identify the use of a "Tahoe architecture theme" to ensure that the LTBMU built environment is visually compatible with the local alpine physical and cultural environment. Meeting this standard is consistent with the perpetuation of the valued scenic attributes identified in FEIS section 3.4.20 – Scenic Resources.

Terrestrial Wildlife Habitat and Species, Including Management Indicator Species (MIS)

Post Fire / Burned Forest Habitat

PC 238: The Forest Service should include forest-wide standards to maximize the protection of post-fire habitat from logging and measurable standards for closed canopy retention that are at least as protective as the standards enacted under the 2001 Sierra Nevada Framework.

Sample Comments: *"The LTBMU management plan should include specific and enforceable forest wide standards for closed canopy as well as protection of mature and old growth forests that are at least as strong as the 2001 Sierra Nevada Framework Plan.*

First and foremost the Sierra Club recommends that the management plan include an enforceable forest-wide standard requiring the Forest Service to maintain viable populations of all native wildlife species that live in the L TBMU, such as the California spotted owl and the black-backed woodpecker. In addition, the Sierra Club recommends strengthened forest-wide standards for protecting the forest habitat for these species. For example, the draft plan currently allows up to 90 percent of post-fire habitat to be logged, but unlogged post-fire habitat is needed by species such as the black-backed woodpecker, which has been designated as candidate for protection under the California Endangered Species Act. Therefore, we recommend that the LTBMU plan include forest-wide standards to maximize the protection of post-fire habitat from logging. The draft management plan includes vague and potentially weaker standards for closed canopy retention, even though closed canopy forest habitat is important for wildlife such as the California spotted owl. The Forest Service has demonstrated that it can enact clearer and stronger standards for closed canopy retention, as evident in the 2001 Sierra Nevada Framework. Accordingly, the Sierra Club recommends that the LTMBU plan include measurable standards for closed canopy retention that are at least as protective as the standards enacted under the 2001 Sierra Nevada Framework.

Response: Although there are situations following a fire in which removal of dead or dying trees would be required for public safety, abatement of long-term fuel hazards, ecological restoration, or to off-set restoration costs, the standard related to this resource has been revised to reflect the importance of this habitat to various wildlife species and the idea that a "one size fits all" approach isn't preferable. We have revised the standard to clarify that the needs of local wildlife associated with components of this habitat (e.g., snags) would be a key driver in developing restoration projects in burned areas. The revised standard does not have fire size thresholds or percentage retention targets because it is important to consider during project development the location of fire events with respect to public safety concerns, the quality of the burned habitat for species normally associated with burned forests, species present in the project area, and other driving resource needs (e.g., water quality).

It was determined that the 2001 Sierra Nevada Framework, as written, could not be meaningfully implemented. As a result, the Forest Service prepared the 2004 Supplemental Environmental Impact Statement (SEIS) and a Record of Decision (ROD) was issued. The SEIS addressed the same management issues as the 2001 Framework but the approach adopted in 2004 was implementable region-wide. The current proposed revision to the Forest Plan addresses these

same management issues but in a way that is relevant to achieving desired conditions specific to the LTBMU.

Responses regarding canopy retention, removal or large trees, and the creation of early seral stage openings can be found with responses to PC 74 (240), 216, 232, 87, and 25.

PC 73: The Forest Service should provide standards to prevent salvage logging of post-fire habitat.

PC 214: The Forest Service should increase required snag densities to support spotted owls and BBWO.

PC 243: The Forest Service should re-evaluate the standard for retaining snags in burned forest to ensure that habitat requirements will be met.

PC 287: The Forest Service should Change the DLRMP to require retention, through a forest-wide standard (not a guideline), of at least 90% of any moderate/high-severity burn areas which are created by fire, wildland or otherwise, outside of the Defense Zone, and retain the maximum possible amount of such habitat that can be retained in the Defense Zone while ensuring protection of homes.

PC 300: The Forest Service should include a standard that would retain all post-fire habitat outside the WUI.

Sample Comments: *"In light of the science clearly demonstrating the significant value of post-fire habitat to species like the back-backed woodpecker, the LTBMU Plan must include standards to protect this habitat and must do so in a way that is scientifically supportable. The only standard that thus far exists is the 10% standard, which, as already discussed above, is not supportable. Consequently, the Final Plan must include a scientifically supportable standard such as retaining all post-fire habitat outside the WUI." (PC 300)*

"Moreover, given that black-backed woodpeckers have an extremely close affinity with postfire habitat, specifically high-severity post-fire habitat, the best and only way to protect the species is to adopt standards that ensure the protection of post-fire habitat, especially mid to high severity post-fire habitat. And the only way to effectively do that is to protect all post-fire habitat." (PC 300)

"Again, the only way to ensure the viability of the species is to protect its habitat and that means protecting post-fire habitat from salvage logging. Thus, until a scientifically supportable standard regarding salvage logging is established, the Plan will not be adequate." (PC 300)

"To provide more meaningful protections for Black-backed Woodpecker populations, and the populations of the many wildlife species associated with post-fire habitat, we suggest the following changes to the DLRMP: • Change the DLRMP to require retention, through a forest-wide standard (not a guideline), of at least 90% of any moderate/high-severity burn areas which are created by fire, wildland or otherwise, outside of the Defense Zone, and retain the maximum possible amount of such habitat that can be retained in the Defense Zone while ensuring protection of homes." (PC 287)

"The DEIS does not provide analysis of 1) what percentage of burned stands in areas less than 1,000 acres will be left; 2) how much planned burning in the Basin is likely to lead to burned forest habitat – i.e. large burned snags – that would be beneficial to the woodpecker; 3) how much and what quality burned habitat will likely result from Plan implementation; and 4) given the information in Nos. 1-3, whether the policy to retain only 10 percent of the burned forest in a large fire will provide adequate habitat for black backed woodpecker over time." (PC 243)

"We are deeply troubled by the lack of meaningful protections for snag forest habitat, and do not see any evidentiary/analytical basis in the DEIS for a conclusion that the 10% retention standard is remotely adequate to maintain viable populations; nor do we believe it is remotely adequate to maintain viable populations." (PC 243)

The emerging evidence indicates this to be the case for Spotted Owls, as data show that occupancy is harmed by logging (Seamans and Gutierrez 2007), the owls strongly tend to avoid mechanically thinned areas (Keane et al. 2011), and logging facilitates invasion of aggressive barred owls, which often out-compete Spotted Owls (Dugger et al. 2011). In contrast, mixed-severity fire, without post-fire logging, creates important suitable post-fire foraging habitat for Spotted Owls, and the owls preferentially select unlogged moderate-severity and high-severity fire areas for foraging (Bond et al. (2009a). Mixed-severity fire, with an average of about 32% high-severity effects in home range core areas, does not reduce occupancy of Spotted Owls (Bond et al. 2012 in press). Similarly, both pre-fire and post-fire logging harm Black-backed Woodpeckers, while fire alone and very high snag densities in unburned forest (snag densities at levels similar to those found in moderate/high-severity burn areas) provide excellent suitable habitat (Goggans et al. 1989 [Table 8, showing almost complete avoidance of salvage logged areas among Black-backeds otherwise nesting in unburned forest with very high snag density from beetle mortality], Hanson and North 2008, Hutto 2008, Siegel et al. 2012a, Siegel et al. 2012b [finding Black-backed selecting areas of highest post-fire snag basal area, while, in Fig. 10, almost completely avoiding salvage logged areas]). The Forest Service's own data indicates that higher-severity post-fire conditions create unique and ecologically important habitat (Burnett et al. 2010, Burnett et al. 2011), and such habitat is not mimicked by mechanical thinning or clearcutting (Swanson et al. 2010). With regard to active snag creation, scientific data indicates that average snag densities in the natural condition on the LTBMU is about 8 snags per acre over 16 inches in diameter at breast height in unburned forest (Barbour et al. 2002), and Verner et al. (1992) recommend at least 8 large snags per acre for Spotted Owl foraging habitat, equating to at least 20 square feet per acre of large snag basal area (and more for nesting habitat), and successful Black-backed Woodpecker nesting is associated with considerably higher snag densities than this—at least several dozen large snags per acre (Goggans et al. 1989, Bonnot et al. 2008, Bonnot et al. 2009, Siegel et al. 2012b). The Forest Service's own recent technical report concludes that natural mortality levels in unburned conifer forests of the Sierra Nevada are about 8-14% (North 2012, p. 18), which equates to about 10 large snags per acre on the LTBMU, given the DEIS's estimate of an average of about 100 trees per acre over 15 inches in diameter on the LTBMU (DEIS, p. 3-298). In contrast, there are only about 5-6 snags per acre on average currently on the LTBMU in unburned forest (DEIS, p. 3-296). Current science shows that higher snag densities do not result in higher fire severity when fire occurs (Bond et al. 2009b) and, in fact, will tend to result in lower fire severity (Simard et al. 2011), so creating additional large snags in the context of active ecological management is not inconsistent even with management in the WUI. (PC 214)

"Allows salvage logging, the removal of large trees over 30 inches in diameter, and the creation of large openings in forest stands;" (PC 73)

Response: For response to comments regarding the assessment of the Black-backed woodpecker (BBWO) population status (PCs 300 and 243), please see response to comments #283 and 275. For response regarding the removal of trees greater than 30 inches in diameter and creation of early seral openings, see response to PCs 216, 232, 87. For the evaluation of viability, please see FEIS Appendix E (Volume III).

We agree that snags in burned habitat are an important habitat component of the LTBMU landscape and the originally proposed guideline was inadequate at clearly demonstrating this value. Although flexibility for retention of snags in burned forest habitat increases with distance from the WUI, including the Defense Zone, the level of habitat restoration is ultimately dependent upon specific conditions that can't be predicted until a wildfire occurs. Therefore, following a review of our proposed guideline for post wildfire habitat restoration, we concluded that a one-size-fits- all approach isn't feasible given the variability in fire effects, location and size of fires, suitability of pre-burned habitat for burned snags associated wildlife after fire, public safety needs, and generally meeting our multiple use mandate. Consequently, we have revised the standard related to possible restoration projects in post-fire habitat to focus more on the process of resource prioritization/consideration when identifying the need for restoration and developing restoration projects rather than simply applying a quantitative retention level that may not be supportable for all post-fire landscapes.

The revised standard clarifies that the needs of local wildlife associated with components of this habitat (e.g., snags) would be a key driver in developing restoration projects in burned areas. The revised standard does not have fire size thresholds or percentage retention targets because it is important to consider during project development the location of fire events with respect to public safety concerns, the quality of the burned habitat for species normally associated with burned forests, species present in the project area, and other driving resource needs (e.g., water quality and accelerated restoration of burned areas to pre-habitat conditions for species at risk, e.g. Spotted Owl).

We have used the best available science when preparing the Revised Forest Plan and our analysis of effects, but also taking into account that we are a multiple use agency and are mandated to manage the landscape to meet these varied needs.

The Forest Plan is not the appropriate place to assign acceptable mortality levels from planned burning activities as a one-size-fits all approach because this is a site specific prescriptive decision and influenced by numerous factors, including the vegetation types which have different growing conditions and fire return intervals. Therefore, it is not possible to predict quantitatively or qualitatively how much planned or wildfire burning would result in habitat with large burned snags and the quality of this habitat. This level of detail would be understood only at the project level when site-specific conditions, as well as the purpose and need of the project, are understood.

PC 275: The Forest Service should maintain viable populations of MIS species.

PC 283: The Forest Service should clarify the relationship between population distribution and population viability of MIS species.

Sample Comments: *"The DEIS's conclusion that "current data indicate that the distribution of black-backed woodpecker populations in the Sierra Nevada is stable" (DEIS, p. 3-299) is essentially meaningless for assessing the conservation of the species. A species can be well distributed in an area but nonetheless be at severe risk of negative impacts. It is the DEIS's job to take a "hard look" at the negative impacts of the Draft Plan irrespective of whether distribution is "stable" and that did not occur." (PC 283)*

Forestwide Standards Fail to Ensure Viable Populations of Black-backed Woodpeckers As discussed above, the DEIS and DLRMP utterly fail to ensure viable populations of the Black-backed Woodpecker on the LTBMU, and fail to determine the quantity and quality of habitat necessary to maintain at least viable populations on the LTBMU planning area, contrary to the requirements of the 1982 NFMA regulations. Because of this, and because of the abysmal lack of protections for suitable Black-backed Woodpecker habitat in the DLRMP (e.g., 90% removal of suitable habitat allowed, and no limited operating periods), the Forest Service's proposed management poses a threat to the viability of this species on the LTBMU and in the Sierra Nevada." (PC 275)

Response: The data for Black-backed Woodpecker indicate a stable population distribution in the Sierra Nevada in which black-backed woodpeckers continue to be distributed across the 10 National Forests in the study area (ranging from the Modoc National Forest in the north to the Sequoia National Forest to the south).

As described in the MIS section of the FEIS (Chapter 3, 3.4.14), distribution population monitoring tracks changes in the distribution of each MIS at the Sierra Nevada scale by monitoring the changes in the presence of the species across a number of sample locations, including sampling on the LTBMU. It is designed, in conjunction with habitat monitoring, to meet the regulatory requirement for MIS that "population trends of the management indicator species will be monitored and relationships to habitat changes determined" (1982: 36 CFR 219.19(a)(6)). This monitoring tracks the changes in the distribution of an MIS by monitoring the changes in the presence of the species across a number of sample locations to determine if: (a) the MIS continues to be distributed across the suitable habitat within its range, and (b) there is a stable population distribution in the Sierra Nevada. At the scale of the Sierra Nevada, changes in the distribution of species represent ecologically significant information on the status and change of populations (USDA Forest Service 2001, Appendix E Table E-5, p.E-22). For a discussion of viability, please see Appendix E. Monitoring of viability is not required for MIS.

PC 54: The Forest Service should use the Forest Plan to explain the importance of post fire habitat.

PC 80: The Forest Plan must describe importance of burned habitat.

Sample Comments: *"Finally, it is surprising that the Forest Service is not using the Plan as an opportunity to educate the public about the importance of post-fire habitat, including the importance of post high-severity fire habitat." (PC 54)*

"The Forest Plan is an important opportunity to explain the ecological and evolutionary aspects of post-fire habitat so that the public will understand why such forest is to be protected and conserved (and to be clear, it is not just the black-backed woodpecker that relies on or finds sanctuary in post-fire habitat – many other species do as well). This is especially so given that a) Forest Plans only occur every 15 years or more, and b) Forest Plans represent the overarching guidance for the Forest and therefore should contain the educational information the public and decision-makers need to understand why particular habitats are important." (PC 54)

"For instance, the black-backed woodpecker relies on forest areas which have been burned. There should be some commentary in your plan that points out this fact. The public needs to be aware of the importance of burned forests for species such as this woodpecker. I see no language in your plan about this consideration." (PC 80)

Response: We agree that post fire habitat is one of many important habitats on the LTBMU and the Plan could benefit from additional clarification about the value of fire and burned habitat. Currently, the desired conditions for Forest Vegetation, Fuels, and Fire Management in the Plan describe the desire to reestablish fire (and other important ecosystem processes) in various habitat types within the Basin and achieve natural fire return intervals for each forest vegetation type. We have also revised the standard and guideline regarding post wildfire restoration projects to clarify that the needs of local wildlife associated with snags and other components of this habitat would be a key driver in developing restoration projects in burned areas.

Although BBWO show a strong association with recently burned forest and occur in highest density in these habitat types, BBWO also occur in unburned forest types (Bond, Siegel, and Craig 2012; Fogg et al. 2012; Siegel et al. 2013).

PC 129: The Forest Service should have a specific wildlife measures for at-risk wildlife such as the Black-backed woodpecker.

PC 269: The Forest Service should include a standard that says - "NO logging of burned forest habitat from April through Sept., while the Black-backed woodpecker is nesting."

Sample Comments: *"These are very serious issues that should be fully addressed in the revised DEIS and Plan with an alternative with clear and enforceable standards that maintain all large snags and logs to benefit the recovering ecosystem, limit the amount of entry into the burned landscape only to manage areas where hazard trees may hit homes or roads, maintain strict water quality protections to limit erosion including clear limits on over-snow logging and slash production in or near streams, and add specific wildlife measures for at-risk wildlife such as the Black-backed woodpecker. (PC 129)*

"The Draft Forest Plan, as now written, does not have enforceable standards to ensure the survival of species in the Lake Tahoe Basin Management Unit (LTBMU) National Forest. This is not acceptable! After the experience this summer, when the Forest Service was originally set to kill Black-backed Woodpecker chicks in their nests, there is clearly a need for enforceable standards to protect that species and others! For this reason there should be an enforceable standard that states: "NO logging of burned forest habitat from April through Sept., while the Black-backed woodpecker is nesting."" (PC 269)

Response: As an MIS, the Black-backed woodpecker represents a suite of species that use snags in burned forest habitat. The Black-backed woodpecker is not federally listed or a Forest Service Species of concern. Therefore, we do not think it is appropriate to assign species-specific protection measures, including a Limited Operating Period (LOP), for a species that is representative of a larger group (and a habitat component) and is not federally listed. Instead, we have revised the standard and guideline in the Plan related to post-wildfire restoration projects to clarify the process that would be undertaken in planning for these types of projects and evaluating the need for these projects (*see* Revised Forest Plan, Part 3: Design Criteria/3.1 Ecological Sustainability/Biological Resources Standards and Guidelines/Conservation of Species and Habitat). In addition, the revised standard and guideline clarifies that the needs of local wildlife associated with this habitat would be a key driver in developing restoration projects in burned areas.

PC 289: The Forest Service should add a standard to the DLRMP stating that, within any 5-year period, at least 4,000 acres of suitable Black-backed Woodpecker habitat would be maintained on the LTBMU, through a combination of managed wildfire, mixed-intensity prescribed fire, and active snag creation.

Sample Comment: *"Add a standard to the DLRMP stating that, within any 5-year period, at least 4,000 acres of suitable Black-backed Woodpecker habitat would be maintained on the LTBMU, through a combination of managed wildfire, mixed-intensity prescribed fire, and active snag creation."*

Response: It is infeasible to maintain 4,000 acres of burned forest habitat for the Black-backed woodpecker within any five year period as suggested. The LTBMU is a small unit with insufficient land to sustain this level of burned forest without compromising the health of other habitat types on the landscape. The LTBMU manages approximately 60,000 acres of land outside the Wildland Urban Interface (WUI) and Desolation Wilderness. Working under the conservative assumption that all of this land is in the appropriate seral stage for Black-backed woodpecker prior to burning, all of this land would have been consumed by moderate to high severity fire within 75 years if 4,000 acres were burned every 5 years, leaving the LTBMU with a severe paucity of the multitude of other habitat types and seral stages, including late seral forest. Secondly, where prescribed burns are used, management can expect up to 10-20% mortality and these activities are not purposefully designed to create high severity burned forest habitat. Wildfire, the other source of habitat creation for Black-backed woodpecker, cannot be predicted to achieve this standard. As a multi-use forest, the proposal to maintain 4,000 acres of burned forest habitat within any five-year period could feasibly limit other uses on NFS lands. The LTBMU also supports a variety of TECPS species (e.g., plants, fish, amphibians, etc.) that exhibit a variety of habitat preferences beyond those of burned forest habitat.

Although maintaining 4,000 acres of moderate to high severity burned forest habitat every 5 years is infeasible, the Forest Plan includes a number of original, new, and revised strategies and standards and guidelines that are intended to provide burned forest habitat and important features such as snags and coarse woody debris. We have also revised the standard and guideline regarding post wildfire restoration projects to clarify that the needs of local wildlife associated with this habitat would be a key driver in developing restoration projects in burned areas.

PC 504: The Forest Service should recognize the value of burned forest (snag) habitats and should be actively managing for this habitat type.

Sample Comments: *"Change the DEIS and DLRMP to say that prescribed fire would have less than 20% mortality in the Defense Zone, but could and should sometimes have higher levels of tree mortality outside of the Defense Zone in order to provide habitat (which would not be open to post-fire logging) for Black-backed Woodpeckers and other post-fire associates. The Forest Service should be actively managing for this extremely important, rare and highly bio-diverse habitat type."*

Response: See response to comment PC 80 for a discussion of the importance of burned forest habitat.

The range of acceptable fire conditions are described in the desired conditions for each of the major vegetation types. The desired conditions drive the Forest Plan. For example, the desired condition for the function of white fir-mixed conifer vegetation type states the following:

"Fire and fire surrogates approximate a fire return interval of 10-30 years in white fir-mixed conifer stands. Frequent, low to mixed severity fires are characteristic in this type, including throughout spotted owl and goshawk PACs and HRCAs. Stand-replacing fire occurs on an average of 15% of burned acres, with occasional more severe fires driven by extreme weather. Fires burn primarily on the forest floor, rarely spreading between canopy trees as active crown fire. Crown torching leads to forest openings and generation of large snags. Except in rare events, contiguous areas of crown mortality after fire are less than 10 acres in size. High severity patches are principally confined to higher density, closed canopy stands and/or warm, upper slopes. Where this type overlaps the WUI, fires occur as surface fire due to fuels treatments. We can assume that if conditions are not favorable to those types of fire effects described in desired conditions, then we will put out."

In response to the comment regarding the lack of analysis of effects due to the loss of snag habitat since the 19th century, we have based our analyses of existing conditions on the current habitat conditions for all sensitive species and associated habitat.

Late Seral Habitat and Species

PC 74: The Forest Service should provide standards to protect the dense forest habitat that owls and martens rely upon, similar to the quantitative standards in the 1988 Plan, and analyze for effects from lack of quantitative standards in the DEIS.

PC 218: The Forest Service should include canopy cover requirements for areas outside of PACs and HRCAs.

PC 221: The Forest Service should provide standards to protect the dense forest habitat that owls and martens rely upon.

PC 249: The Forest Service should clarify the analysis of impacts on late seral-dependent species.

Sample Comments: *"In regard to California spotted owls and martens, the DEIS fails to appropriately address the adverse consequences to the late-seral closed-canopy forest these species rely upon. For instance, the 1988 Forest Plan (p. IV-27) contained specific quantitative protections for management of old forest habitat. Much research has transpired since then showing just how important closed canopy forest is for spotted owls and martens and yet there are no protections for such habitat in the Draft Plan or DEIS. Unlike the 1988 Plan, there are no specific requirements to protect old-growth forest, and there are not any requirements to retain minimum basal area levels associated with suitable habitat (Verner et al. 1992) in Spotted Owl Protected Activity Centers (PACs) or Home Range Core Areas (HRCAs) (see Draft Plan, pp. 96, and 100- 101). Moreover, the Draft Plan (pp. 100-101) does not specify minimum canopy cover retention requirements for these Spotted Owl areas." (PC 218)*

"The DEIS does not take a hard look at the impacts of the draft Plan on wildlife species utilizing late seral habitats such as the spotted owl, marten and goshawk." (PC 249)

Response: See response to PC 216, 232, 87, and 25 for clarification on the approach for removing/killing/girdling ≥30 inch diameter trees, creation of early seral openings, and removal of the Old Forest Emphasis Area Management designation in the proposed Plan. See response to PCs 283, 300, 287, 243, 214, and 220 for post fire restoration.

The desired conditions, strategies, objectives, and standards and guidelines described in the Plan are intended to maintain and enhance the suitability of habitat for all TECPS species (and MIS habitat), including marten and the California spotted owl. The approach in the proposed Plan does not assign quantitative limits on canopy cover and/or basal area retention because we believe this one-size-fits-all approach won't allow us to achieve our desired conditions for forest vegetation, and protect and improve the habitat for sensitive species in the LTBMU. Although we are proposing an approach that allows for flexibility, we believe the management direction is appropriate and adequate to conserve late seral closed canopy habitat for associated species. However, we have added new and revised some current standards and guidelines to clarify the limitations on reducing canopy cover and basal area (in and outside of PACs) and clarify that current late seral closed canopy stands would be retained outside the WUI (and inside the WUI where fire behavior objectives can be met). These measures described in the Plan are not the sole set of protection measures for sensitive species and associated habitat. Additional resource protection measures based on site-specific resource needs and new available science would be incorporated as needed into projects as they are developed. All projects would be evaluated through the NEPA process in which a wildlife biologist would be part of the team and public comment is solicited. Furthermore, although the Plan limits the scope of activities, such as the creation of openings, we do not expect to reach these limits on every project.

We acknowledge that the Plan could benefit from additional language that clarifies our intent to protect late seral closed canopy habitat (e.g., dense canopy cover and large trees) for associated wildlife species without incorporating one-size-fits-all quantitative parameters at the Plan level. See revised and new strategies and standard and guideline portions of the following sections: Forest Vegetation, Fuels, and Fire Management Program Strategy and Biological Resources. We have also increased the canopy cover desired condition for goshawk and spotted owl PACs to 70% cover. Although the guidelines for PACs allow reduction of canopy cover below this desired condition, these circumstances would occur only to improve habitat over the long term

by restoring structure and/or reducing risk from beetle outbreak and catastrophic fire, and would be evaluated in a project-specific basis. We have incorporated a standard that across a late seral closed canopy stand, treatments shall not reduce the canopy of the dominant and co-dominant trees by more than 10%. We agree with the commenter that spotted owl and marten are not simply associated with dense late seral closed canopy habitat but with certain features of these habitats such as snags and coarse woody debris (understory complexity) – both of which are the subject of revised and new standards and guidelines that protect and promote creation of these features on the landscape. We believe these revisions to the Plan have allowed us to be more transparent in our intention to conserve late seral closed canopy habitat for sensitive species like the spotted owl and marten in the LTBMU.

Regarding the results of the SPECTRUM model, we incorrectly stated in the DEIS that late seral closed canopy would decrease as a result of thinning this seral stage to create late seral open canopy habitat. We also incorrectly interpreted the model output in the DEIS. We have reviewed and clarified the model data source and parameters (prescriptions, disturbances, restrictions) and can now more accurately explain the model output. The model output indicates that during a fifty year period following Plan implementation (excluding decade 1) late seral closed canopy forest for all of the major forest types combined would not change from current condition under Alternatives B and E. We have provided additional clarifying information for the SPECTRUM model in sections 3.4.11 (Forest Vegetation), 3.4.14 (Management Indicator Species), and 3.4.23 (Terrestrial Wildlife Species and Habitat) of the FEIS. The FEIS analysis for the potential effects of vegetation treatments, fires, and post-fire treatments has been revised to clarify the potential effects of treatments proposed under the various alternatives.

We agree that spotted owl PACs in the Basin are comprised primarily of what is considered "moderate capability" nesting habitat (including 4M) but have no data to suggest that this influences reproductive success since PACs with moderate capability habitat have produced young. We also have no data to explore if this habitat is selected in proportion to its availability on the landscape or if owls are showing a preference for this habitat type.

Please refer to the monitoring plan for additional clarification about data that would be collected to monitor the effectiveness of the Plan's elements.

PC 265: The Forest Service should monitor potential impacts from management activities to marten and goshawk.

Response: The Forest Plan Monitoring Plan (Appendix A) includes several monitoring questions which would provide information regarding potential impacts from management activities to marten and northern goshawk habitat.

PC 261: The Forest Service should consider how their literature citations for marten are applied.

PC 262: The Forest Service should acknowledge the potentially significant effect on marten population stability that may occur due to the Forest Service's lack of knowledge of where den sites are located.

Sample Comments: *"the DEIS does not provide an adequate discussion of the west-side marten population. No information is given, for example, describing the importance of different habitat*

types to this population. Slauson's review (2008) of past marten monitoring demonstrates that a considerable portion of the west-side population in the Basin is utilizing mixed conifer forest. See Slauson (2008), Figure 6. However, the DEIS does not contain a discussion of what type of habitat marten are using in this forest in terms of stand density, canopy cover or class size. The DEIS also does not describe the importance of the west side population to regional north south connectivity. See Slauson, 2008." (PC 261)

"Third, the DEIS fails to take a hard look at how the loss of canopy coverage and complex forest may adversely affect marten. As discussed, the DEIS's "impact analysis" comparison between the loss of "closed canopy" versus "open canopy" late seral forest is confusing in that it does not distinguish between marten foraging (where marten may utilize lower canopy habitats) and denning and resting habitat where canopy coverage and stand density must be high. As discussed, open canopy forests may be reduced all the way down to 10 percent canopy. The DEIS does not contain a meaningful assessment of this impact. … As discussed, a substantial portion of the west-shore Tahoe marten population appears to be inhabiting late seral, mixed conifer forest, precisely the type of habitat where higher canopies are required. Yet the DEIS simply assumes that this marten population will remain stable despite the loss of quality overstory and understory habitat." (PC261)

"In PSW-GTR-203 Alan Taylor (2007) recommends that ecological restoration of the Lake Tahoe Basin should focus on reduction in basal area of mostly smaller trees and the reintroduction of frequent fire in the vegetation types of the Lake Tahoe Basin. The recommendation is based on the accepted science that this path is best suited to adequately reduce fire risk, while minimizing impacts to late seral species." (PC 261)

"The DEIS and BE proceed on the assumption that 4M habitat can offer moderate capability reproductive habitat for marten, without any on the ground information. Not only is this assumption contrary to the studies cited above, the Forest Service has no information about the reproductive success of marten in Tahoe, and thus can make no conclusions regarding the adequacy of existing or future habitat condition for this species. See Green 2007 ("presence-absence data cannot identify the roles that different habitats and geographic areas play in regional population demographics.")" (PC 261)

"It is well known in the literature that marten denning in forested habitats require high canopy, late seral habitat. See Spencer et al. 1983; Hargis and McCullough 1984; Ellis 1998; Ruggiero et al. 1998; Bull and Blumton 1999; Bull and Heater 2000; Bull et al. 2005; Slauson and Zielinski 2008) Denning and resting habitat are described as follows: - Late successional, old forests; - CWHR 5D and 6; - Canopy cover of at least 50 percent, mostly 60 percent and greater on Westside Sierra Nevada; - Presence of large snags and logs on ground (coarse woody debris)" (PC 262)

Response: We acknowledge the request for greater information about the west shore habitat and regional connectivity for marten. We have supplemented our information in the FEIS and Biological Evaluation (BE) regarding the west shore marten population to more clearly emphasize the importance of this area to marten from a regional connectivity perspective and also provide recent information from a publication by Spencer and Rustigian-Romsos of Conservation Biology Institute (2012). The publication results (modeling) indicate that the west

shore of the Basin is part of a corridor but is not a sole corridor. Lastly, we would like to reiterate that the Plan does not prescribe treatments nor assign locations for such treatments. Therefore, the concern for the west shore habitat is noted, but we are not in a position to evaluate effects from specific actions to this exact portion of the LTBMU since it is not yet known where vegetation treatments, or any potential projects, would occur.

We acknowledge the request for more information regarding marten habitat associations. This information is provided in detail in the Biological Evaluation (BE) for the Plan. We have also included in the FEIS the information that marten in the LTBMU have been found to use mixed conifer and also pine habitat. With reference to the commenter's concern about the appropriateness of 4M habitat for marten, Moriarty et al. (2011) (Table 1) indicates that various 4M habitat types (lodgepole pine, montane riparian, red fir, subalpine conifer, and white fir) are considered "high quality habitat" for marten. We have found marten denning with kits in 4M habitat in the LTBMU. Marten have been found elsewhere in habitat types not normally associated with their normal features such as closed canopy and complex understory (Green 2007). Regardless, our standards and guidelines are focused on the protection and perpetuation of late seral closed canopy habitat and key habitat elements (e.g., snags, coarse woody debris), not on any one particular CWHR type. Moreover, our standards and guidelines prioritize the maintenance of connectivity of late seral forested habitat for associated species.

Regarding the "loss" of 5D habitat and effects to marten, we have added a table (3-35) to Chapter 3 section 3.4.11 Forest Vegetation of the FEIS that indicates that 5D does not comprise as much of late seral closed canopy habitat on the LTBMU as 5M and 6 habitat types under current conditions. Regardless, we incorrectly interpreted the model output in the DEIS. We have reviewed and clarified the model data source and parameters (prescriptions, disturbances, restrictions) and can now more accurately explain the model output. The model output indicates that during a fifty year period following Plan implementation (excluding decade 1) late seral closed canopy forest (of which 5D is a part) would not change from current condition under Alternatives B and E. The model output indicates that 5D habitat would increase under Alternatives B, C, and E in all of the major forest types. We have provided additional clarifying information for the SPECTRUM model in section 3.4.11 (Forest Vegetation) of the FEIS. We have also described predicted trends for the seral stages based on model output in section 3.4.23 (Terrestrial Wildlife) of the FEIS and in the B E for Terrestrial Wildlife Species.

We acknowledge the concern regarding marten habitat conditions and appreciate the referenced information. To clarify, the Plan does not propose a "loss of quality overstory and understory habitat", "higher levels of logging", or "extensive logging." Spatially, the locations and scope of vegetation treatment projects are not assigned by the Plan so whether vegetation management treatments would be extensive or not is not knowable at this level of planning. The Plan does not prescribe treatments, including those that would modify the canopy or understory in any way. Likewise, the Plan does not propose reducing canopy cover by any specific percentage (commenter refers to opening a canopy down to 10% cover). If the commenter is concerned about late seral closed canopy habitat, reducing the canopy to 10% (the percent suggested by the commenter) would mean that that habitat would no longer be considered late seral habitat and this approach is simply not consistent with achieving our desired conditions as stated in the Plan. If the commenter is referring to the creation of early seral stage habitat which could have more open canopy conditions, the Plan and FEIS are clear that early seral stages would not be created

in late seral habitat and that where there are concerns about potential for occurrence of late seral species in mature mid seral stands that could be influenced by early seral creation, these conditions would be evaluated on a project-specific basis. We understand that there may be some confusion related to the creation of early seral stages and have clarified in the guidelines that wildlife concerns, habitat connectivity, proximity to late seral forest, and other factors potentially influencing sensitive species (e.g., marten) would be considered during project development (*see* Part3: Design Criteria/3.1 Ecological Sustainability/Forest Vegetation, Fuels, and Fire Management Standards and Guidelines).

We agree with the commenter that diseased trees can be important resting and denning structures for marten. Unfortunately, we are unable to locate where this statement was made in the FEIS. We also believe that the guideline in the Plan referring to the limited exceptions (including disease) under which a tree greater than 30 inches in diameter could be removed may have been ambiguous and we have revised this guideline. We have also clarified in our assumptions in the FEIS (Terrestrial Wildlife section, 3.4.23) that some of the circumstances under which a tree greater than 30 inches in diameter may be removed specifically include wildlife habitat objectives.

We acknowledge the commenter's concern regarding level of marten den information. The Plan focuses on the protection of habitat because the USFS manages habitat. The Plan includes standards and guidelines for the protection of late seral closed canopy habitat, snags, coarse woody debris, and other key habitat elements that are considered important to marten. We have added a number of standards and guidelines for the protection of late seral closed canopy habitat (*see* Part 3: Design Criteria/3.1 Ecological Sustainability/Biological Resources Standards and Guidelines/Conservation of Species and Habitat and Forest Vegetation, Fuels, and Fire Management Standards and Guidelines). We believe that our desired conditions, objectives, strategies, and standards and guidelines in the Plan will assist in maintaining and enhancing the highest quality marten habitat, including resting and denning habitat. Furthermore, the Plan emphasizes the protection of habitat connectivity which is critical to the maintenance of suitable marten habitat since this species is known to be highly sensitive to habitat fragmentation.

PC 241: The Forest Service should protect marten dens and know where dens are located, and have updated information on the health of the marten population in the LTBMU.

Sample Comments: *"One of the findings of Slauson's analysis is that, due to the lack of marten on the east side or at lower elevations on the west side of the Sierra, Tahoe's west-side marten population is a critical population segment connecting marten populations in the south to the dwindling population in the north. See Slauson (2008): "The west shore population represents the only known contiguous linkage for marten populations to the north and south of the Lake Tahoe Basin.""*

"Fragmentation is considered detrimental to marten occurrence (Wildlife BE p.64). This higher level of fragmentation reflects existing conditions on the LTBMU and the higher potential for increased fragmentation under Alternatives B and C for the LTBMU (BE p. 104). One of the most critical aspects of marten biology are den sites and their surrounding habitat, which comprise the reproductive habitat whose quality will determine whether marten remain a viable species in the Basin."

"To protect marten den sites, the 2004 SN Forest Plan Amendment (Record of Decision, p.39) (USDA 2004a) required a 100 ac buffer around all marten dens with the protection of the highest quality habitat surrounding den site in CWHR types 6, 5D, 5M, 4D, 4M in descending order of priority, based on availability, provide highest quality habitat for marten. This den buffer represents the best thinking on protection of important areas for marten and is the Regional direction. The draft Plan contains no protection for marten den sites. Even more problematic, the Forest Service does not know where the den sites are and thus are in no position to be able to protect these habitats."

Response: For a discussion of the updates to the FEIS based on the importance of the west shore for marten, see response to PC 261 and 262. For a discussion of the approach regarding knowledge of marten den locations, see response to PC 261 and 262. For viability, please see Appendix E. The effects of ski areas on marten are discussed in the FEIS.

We agree with the commenter's concern about ambiguity in marten den protection in the Plan. In addition to our LOP (Appendix E of the FEIS), which limits activities near dens during the breeding season, we have included a standard for a protective buffer around a marten den site *(see* Part 3: Design Criteria/3.1 Ecological Sustainability/Biological Resources Standards and Guidelines/Conservation of Species and Habitat).

We would like to clarify that we do not propose to "conduct intensive logging in late seral marten habitat." We suggest that the commenter refer to the desired conditions (including photographs) for each the major forest types described in the proposed Plan (*see* Part 1: Vision/1.2 Desired Conditions/Ecological Sustainability/Forest Vegetation, Fuels, and Fire Management) to more fully understand that intensive logging, particularly of late seral habitat, would be counter to achieving our desired conditions. We also disagree that any vegetation management activities would occur "without any knowledge of how marten – or the most critical marten habitat – is being affected." The Plan does not assign specific management activities and does not assign specific locations for activities. This type of decision (i.e., what would be done and where) would be made on a project-specific basis when the specific resource needs, and potential effects, are more fully understood. The FEIS does describe potential effects of the proposed Plan and the various alternatives on marten habitat given the suite of potential activities that could occur. The FEIS and BE have been revised to further clarify the potential effects on marten, taking into account revisions that have been made to our standards and guidelines related to the protection of den sites and late seral habitat, structural features associated with this habitat, as well as connectivity of late seral habitat. Refer to the following sections of the Revised Forest Plan (Volume II) to view the original, revised, and new standards and guidelines: Part 3: Design Criteria/3.1 Ecological Sustainability/Forest Vegetation, Fuels, and Fire Management Standards and Guidelines and Biological Resources Standards and Guidelines/Conservation of Species and Habitat.

We have used for our baseline condition and effects analysis the most recent and best available knowledge of martens in the Basin that we have at this time. We have incorporated additional science for marten threats and trends in the Sierra Nevada that has become available since the publication of the DEIS into the BE and FEIS. We also continue to interact with Keith Slauson (PSW researcher who has conducted extensive work on marten in the LTBMU) regarding the

state of the marten population in various portions of the Basin. This new information has been added to the species discussion in the FEIS and BE.

PC 260: The Forest Service should consider the connection between the loss of viable marten populations in the north and intensive logging.

Sample Comments: *"The DEIS fails to take a hard look at the plan's impacts on marten in several ways. First, the DEIS does not contain a meaningful description of the marten's present imperiled situation in the northern Sierra Nevada or its causes. As discussed above, marten have largely disappeared from the Plumas National Forest – where considerable logging under the QLG plan has occurred – and most recently have disappeared from the Sagehen Experimental Forest, as described by Moriarty, 2009 & 2011. The DEIS barely mentions these declines. See DEIS, p. 3-294: "detection rates have decreased in at least some localized areas (e.g., Sagehen Basin area of Nevada County)." The DEIS also does not conduct any analysis regarding the likelihood that logging proposed for the Tahoe Basin may have similar results in causing the loss of a viable marten population. As Moariarty (2011) describes: The most noticeable decline in marten detections at SEF occurred between 1983 and 1990. During that period, 39 percent of the forested habitat in SEF experienced some form of timber harvest, including 11 percent harvested with clear-cut or shelter-wood methods and 28 percent harvested with salvage sales (Fig. 5). As a result, we estimated that the percent cover of high quality marten habitat in SEF declined from approximately 27 percent in 1978 to 15 percent by 1990. A number of other studies suggest that martens tend to disappear from an area after the percent of total forest cover is reduced below 45– 75 percent (Hargis et al. 1999, Potvin et al. 2000, Fuller 2006, Webb and Boyce 2009). Sagehen Experimental Forest currently falls within this range as 42 percent of the marten habitat in SEF changed from a suitable to unsuitable class from 1978 to 2007. The result of the DEIS' lack of discussion is that no connection is made between the loss of viable marten populations in the north and intensive logging."*

Response: We acknowledge the concern about the regional status of marten. First, we would like to clarify that the cause of the loss of marten distribution throughout their range is not clear (Zielinski 2013). Only in the case of the decline at Sagehen Experimental Forest (SEF) has a correlation been considered plausible – habitat fragmentation from harvest activity (Zielinski 2013), particularly salvage logging and clear cut or shelterwood harvest (Moriarty et al. 2011). We should note that SEF is an experimental forest where treatments occur in close proximity to one another. The proposed plan provides standards and guidelines to protect late seral habitat as well as connectivity between them.

We realize that there could be challenges associated with balancing the need to move the major forest types towards desired conditions, protect sensitive resources (e.g., wildlife, fish, botanical, cultural), maintain access and opportunities for public use as part of our multi-use mandate, protect water quality, and reduce the risk of severe wildfire near our communities and in our mature stands. Therefore, our standards and guidelines in the Plan have focused on the protection of late seral closed canopy habitat and key elements within this habitat type (e.g., denning and resting features, snags, coarse woody debris), as well as connectivity of late seral habitat. These are not the sole set of protection measures, additional measures that could be developed and implemented on a project-specific basis. We have added new standards and guidelines and revised a number of our current standards and guidelines to be clearer about our

intentions to protect habitat for late seral species. See the Revised Forest Plan (Volume II), Part 3: Design Criteria/3.1 Ecological Sustainability/Forest Vegetation, Fuels, and Fire Management Standards and Guidelines and Biological Resources Standards and Guidelines/Conservation of Species and Habitat

PC 296: The Forest Service should base general forest prescriptions on the wildlife that are occurring at treatment sites.

Sample Comments: *"Conversion from mid to early seral stage forest will decrease the prey base for American marten, goshawk and owls and mesocarnivores that compete within an unbalanced and fragmented trophic environment. This also has the potential to eliminate corridors for the sensitive wildlife species and decrease limited habitat for forest bats. The general forest prescriptions need to be based on wildlife that are occupying the treatment sites proposed for treatment."*

Response: Agreed. Prescriptions are outside the scope of the Forest Plan but would be developed on a project-specific basis and take into account, through the efforts of IDT members during project development under NEPA, the presence of sensitive wildlife species and suitable habitat in the project area. At the time of project-development, additional resource protection measures beyond those included in the Plan, and based on the needs of sensitive wildlife and habitat types and based on new available science, may be incorporated into the project design.

PC 82: The Forest Service should analyze how the effects of the exceptions to the 30" DBH requirement would impact wildlife.

Sample Comments: *"The Draft Plan (p. 96) allows numerous exceptions to the 30" dbh "limit" thus effectively swallowing the rule. And, in fact, the limit is not a limit, it is just a Guideline. The DEIS, however, contains no analysis of how this lack of a limit, or the fact that the exceptions are vast, will negatively impact the Forest, including wildlife like the black-backed woodpecker, California spotted owl and marten. Moreover, there is no analysis of how these negative impacts could be mitigated such as, at the very least, rather than removing these greater than 30" dbh trees, girdling and maintaining them in the Forest as snags, or as downed wood to provide for ecosystem value."*

Response: As stated in the Forest Plan Consistency section of the Revised Plan Introduction, projects and activities are required to comply with Guidelines as well as Standards. The guideline related to the removal of trees 30 inches dbh or larger has been revised to clarify the limited exceptions under which these trees may (but not must) be removed, girdled for snag creation, or felled as coarse woody debris. The use of this guideline would be for circumstances that represent exceptions rather than common practice, and would be based on project-level purpose and need as well as on site-specific conditions. Therefore, there is no meaningful way to disclose impacts associated with this guideline except at the project-level, not at the level of the Forest Plan. However, we acknowledge the potential for the loss of some large trees and the FEIS effects analysis has been updated to reflect this potential.

PC 200: The Forest Service should ban logging during nesting season (April through August) and retain at least 80 percent of all recently burned forest in order to safeguard the Tahoe Basin's biodiversity.

Sample Comments: *"Your management plan for the Lake Tahoe region has a couple of flaws. First, it doesn't place any meaningful constraints on logging. Second, it doesn't adequately protect the wildlife indigenous to the area. In order to address these shortcomings, a revised plan would do the following: * ban tree logging during nesting season (April through August) * maintain 70 percent canopy cover in mature forest * retain at least 80 percent of all recently burned forest in order to safeguard the Tahoe Basin's biodiversity"*

Response: For response to comment regarding the retention of 80% of all recently burned forest, see response to PCs 220, 300, 287, 243, and 214. For response to the comment to maintain 70% canopy cover, refer to the response to PC 201.

The Limited Operating Periods (LOPs) that preclude treatment in habitat occupied by California spotted owl and Northern Goshawk during the breeding season are described in Appendix E (Volume III). The limited conditions that would allow these LOPs to be waived for vegetation treatments or prescribed fire during the breeding season are also described in Appendix E. As described in the Plan, no vegetation treatments would be allowed if the proposed activity would potentially disturb breeding as determined by a thorough biological review of the proposed treatment intensity, duration, timing, and specific site. Likewise, no prescribed fire would be used in PACs unless reproduction has not occurred in at least the previous three years and the PAC was not occupied during the previous breeding season.

PC 201: The Forest Service should maintain 70 percent canopy cover in mature forest.

Sample Comments: *"Your management plan for the Lake Tahoe region has a couple of flaws. First, it doesn't place any meaningful constraints on logging. Second, it doesn't adequately protect the wildlife indigenous to the area. In order to address these shortcomings, a revised plan would do the following: * maintain 70 percent canopy cover in mature forest"*

Response: We agree that dense canopy cover and large trees are key habitat features for spotted owls and that mature canopy cover (e.g., 70%) is strongly associated with owl occupancy in the literature. Spotted owl habitat in PACs and HRCAs, including key habitat elements, continues to be protected under the proposed Plan through the objectives, strategies, and standards and guidelines that assist in achieving the described desired conditions for these designated areas. We have revised a number of standards and guidelines related to late seral habitat as well as PACs to clarify the intention to protect late seral habitat where it occurs and PAC habitat. See revised and new strategies and standard and guideline portions of the following sections: Forest Vegetation, Fuels, and Fire Management Program Strategy and Biological Resources. We have also increased the canopy cover desired condition for goshawk and spotted owl PACs to 70%. Although the guidelines for PACs allow reduction of canopy cover below this desired condition, these circumstances would occur only to improve habitat over the long term by restoring structure and/or reducing risk from beetle outbreak and catastrophic fire, and would be evaluated in a project-specific basis. It should be noted that although we do have stands with ≥70% canopy cover, many of the forested areas in the LTBMU don't have as much as 70% canopy cover in mature classes simply because of the geography and topography of the LTBMU (*see* Forest Vegetation section of the FEIS Chapter 3). Many of the PACs inhabited by spotted owls in the LTBMU have average canopy cover below 70%.

PC 256: The Forest Service should clarify Plan and DEIS with regard to thinning of PACs and HRCAs.

PC 270: The Forest Service should include the standard - "There should be NO logging permitted in CA Spotted Owl Protected Activity Centers."

PC 454: The Forest Service should prohibit logging in CASPO PACs.

Sample Comments: "Also, the Forest Plan does not provide adequate habitat protections for the California Spotted Owl. Both the CA Spotted Owl and the Black-backed Woodpeckers' main food supply is in burned forest areas. Therefore, another enforceable standard of the Forest Plan should be: "There should be NO logging permitted in CA Spotted Owl Protected Activity Centers."" (PC 270)

"Some studies suggest that owls enjoy habitat that has been moderately burned. This is because their prey thrives in burned areas. In contrast when there is logging, studies show that spotted owls often abandon those degraded areas. This should be interpreted to mean that no logging should be allowed in areas where spotted owls live and this policy should be incorporated in all US Forest Service Forest Plans." (PC 270)

"PLEASE DO NOT ALLOW LOGGING IN THE CALIFORNIA SPOTTED OWL PROTECTED ACTIVITY CENTERS." (PC 454)

the DEIS misrepresents the potential impacts of the draft Plan in its assertion that "[w]hile canopy closure limits would only be retained for PACs and HRCAs, emphasis would be placed on maintaining and improving late seral habitats." DEIS, p. 3-450 (emphasis added). As discussed, the draft Plan standard authorizes logging in PACs which are unoccupied or, even if occupied, where necessary to the overall fire objective in the WUI or to reduce threats to adjacent forested stands caused by "pathogens, insects, disease and/or wildfire" anywhere in the Basin. See Plan, p. 101 (SG71.) Further, there are no "standards" for logging in HRCAs, and even the guideline for HRCAs states that "reduction in existing canopy cover in PACs and HRCAs" may be allowed "whenever the PACs and HRCAs do not meet the desired conditions for the Plan or whenever a reduction would improve habitat conditions to meet life history needs of the species." See id. (SG69). The DEIS analysis completely ignores these gaping exceptions to maintenance of existing canopy cover, and thus does not meet NEPA's informational requirements. (PC 256)

"In regard to California spotted owls and martens, the DEIS fails to appropriately address the adverse consequences to the late-seral closed-canopy forest these species rely upon. For instance, the 1988 Forest Plan (p. IV-27) contained specific quantitative protections for management of old forest habitat. Much research has transpired since then showing just how important closed canopy forest is for spotted owls and martens and yet there are no protections for such habitat in the Draft Plan or DEIS." (PC 256)

Response: See response to PC 216, 232, 87, and 25 for clarification on the approach for removing/killing/girdling ≥30 inch diameter trees, creation of early seral openings, and removal of the Old Forest Emphasis Area Management designation in the proposed Plan. For response to

comments regarding the retention of habitat for spotted owls and martens, please also see response to PC 74 (240).

The standard related to vegetation treatments in PACs (*see* Part 3: Design Criteria/3.1 Ecological Sustainability/Biological Resources Standards and Guidelines/Protected Activity Centers and Home Range Core Areas (PACs and HRCAs)) describes the limited circumstances under which vegetation treatments would be allowed in PACs. These circumstances include the following: when public safety is threatened within the Wildland Urban Interface (WUI), to reduce threats to the persistence of stands, or when vegetation treatments (which could include mechanical treatment, hand thin treatment, and/or prescribed fire) would improve habitat condition for spotted owl [or Northern Goshawk]. Strategic treatments would be developed by IDT members (including a wildlife biologist) through the NEPA process and include resource protection measures to protect habitat features and habitat function for these species, and insure that PAC habitat continues to achieve or trend towards desired conditions. Where PAC habitat is deteriorating for the species, restoration treatments would be designed specifically to improve or maintain habitat condition and function for the spotted owl [or Northern Goshawk]. For example, restoration of PAC habitat could be undertaken if owls [or Northern Goshawk] have not reproduced in the previous three years, the PAC is not occupied and either desired conditions are not being met or treatments would help maintain desired conditions. Under this type of project, restoration prescriptions would be designed specifically to improve habitat features for the spotted owl (or Northern Goshawk). For example, treating a PAC stand could be designed to allow accelerated growth of the larger trees by reducing competition from smaller, pole sized trees and increasing the representation of important structural elements (e.g., snag and coarse woody debris creation) in the habitat.

An LOP would be in effect for all treatments that are proposed within ¼ mile of a spotted owl and/or northern goshawk nest or activity center, regardless of treatment purpose (e.g., restoration of PAC, wildland fire risk) unless it has been determined following a thorough biological review based on site-specific conditions that the activity would not disturb breeding (*see* Appendix E).

We have updated the FEIS with recent analyses and syntheses of the effects of fires on spotted owls and used this information to update our analysis of effects from fire. We have also updated the FEIS with recent analyses and syntheses on the effects of vegetation management on spotted owls. The FEIS has also been updated to include additional analyses regarding the potential suite of activities proposed by the various alternatives keeping in mind that the Plan does not prescribe actions, and that any effects would be best understood at the project-level when the scope of activities and locations are fully understood.

PC 174: The Forest Service should provide a balance between native wildlife protection and fuels management.

Sample Comments: *"remember that national forests are supposed to managed for multiple uses -- including wildlife habitat -- and not just for timber harvesting."*

"I am a member of the Sierra Club, but I do support selective logging of small areas (less than 17-20 acres) and allowing open space which reduces the danger of crown fires. The open space allows good forage for the spotted owls, and provides biodiversity. I support using the slash from

logging for biofuel. This kind of logging supports local jobs as well as making the watershed safer from the destructive results of wildfire."

"We must establish a well balanced plan that protects the native wildlife and at the same time decrease wildfire endangerment of the Lake Tahoe region. Both can be accomplished with proper planning."

Response: Agreed. The Forest Plan has been designed to strike a balance between various multiple uses in the LTBMU, including the protection of habitat for sensitive wildlife species. The Plan includes a variety of desired conditions for wildlife habitat that the Plan's objectives, strategies, and standards and guidelines would help achieve. Many of these measures are proactive in that they propose restoration of wildlife habitat and also integrative in that they address other potential management actions (e.g., fuels management) or uses in the context of wildlife habitat protection. The Plan includes a revised guideline (*see* Part3: Design Criteria/3.1 Ecological Sustainability/Forest Vegetation, Fuels, and Fire Management Standards and Guidelines) that states that wildlife objectives would increase in priority with increasing distance from communities and proximity to specific wildlife resources whereas fire and fuel objectives would increase in priority with increasing proximity to communities. Ultimately, the standards and guidelines are not the sole constraints on project-level activities, and project-level decisions generally include additional resource protection measures to minimize adverse impacts to sensitive species and habitat.

PC 203: The Forest Service should protect and preserve old growth forest.

Sample Comments: *"The old growth forest needs protecting. Therefore, I ask you at least to recommend Wilderness protection for sensitive roadless areas in the Tahoe Basin including: Dardanelles-Meiss, Freel Peak, and Granite Chief Additions. Also, if you can, try to keep the surrounding roads and nearby areas as wild and natural as possible. The back-country areas need to be designated as "semi-primitive and non-motorized," prohibiting all motorized recreation, including snowmobiles. Old growth forests and the spotted owls go hand and hand and need to be protected."*

"Fully protect old growth forests and the spotted owls and other wildlife that depend on them. Needed wildfire fuel reduction projects should retain large trees (over 30 inches in diameter) while focusing primarily on removing more fire-prone undergrowth adjacent to developed areas."

Response: For a response regarding Old Forest Emphasis Areas, please see the response to PC 25.

We agree that late seral habitat is important for many terrestrial wildlife species, especially the California spotted owl and American marten. We also agree that the Draft Plan was ambiguous about protective measures proposed for late seral habitat, especially given that we are not proposing to implement a one-size-fits all approach for quantitative upper limits on activities nor continue using the Old Forest Emphasis Areas (OFEA) designation. We realize that the approach in the proposed Plan is one that does not assign quantitative limits on canopy cover and/or basal area reduction. We believe this one-size-fits-all approach is infeasible for our current approach

to manage vegetation as well as the species that utilize the variety of habitats in the LTBMU since each potential project will have different purposes and needs, site specific conditions, and resource protection needs. Still, we recognize that these activities required clarification in the Plan and our intent to protect late seral closed habitat, so we have revised and created new strategies and standards and guidelines for the protection of late seral habitat (*see* Revised Forest Plan, Section 3: Design Criteria/3.1 Ecological Sustainability/Forest Vegetation, Fuels, and Fire Management Standards and Guidelines and Biological Resources Standards and Guidelines/Conservation of Species and Habitat).

PC 276: The Forest Service should only protect spotted owl populations as prescribed by science and true need.

Sample Comments: *"Spotted owl populations should be protected only as prescribed by science and true need, and the "established Protected Activity Centers and Home Range areas should be primarily managed to provide habitat for them. Maintain and evaluate the current management while updating the data to determine need.""*

Response: We agree that science and the needs of spotted owl habitat condition in the LTBMU have, and will continue to drive the Forest Service's approach for managing habitat for this species. We also agree that spotted owl PACs are managed to provide habitat for spotted owls. Indeed, PACS are designated areas on the landscape that are delineated around each territorial owl activity center and are maintained on the landscape for this species. With that said, the management approach for any resource in the LTBMU must consider the multiple uses that we as an agency are tasked to manage. Therefore, the management approach described in the proposed Plan represents a balance of numerous, very real needs facing the LTBMU. For example, in many instances, PACs overlap with the Wildland Urban Interface (WUI) where the safety of the public is a priority. In addition, the habitat condition within some PACs has deteriorated over time such that these areas have not been found to support owls or in some cases reproduction. Therefore, in preparing our management approach, we considered protecting our communities while still maintaining the integrity of PAC habitat and also enhancing this habitat condition where possible. We have also used the scientific literature to guide the development of our desired conditions that also reflect the nature of the habitat in the LTBMU given our position on the crest of the Sierra Nevada. We believe our desired conditions, strategies, objectives, and standards and guidelines for spotted owl PACs represent the best possible management approach given all of our needs as a management unit. Furthermore, we heeded the information contained in the scientific literature when evaluating our desired conditions and potential actions to achieve them.

We also agree that monitoring spotted owl habitat and population trends will help us adapt our management approach as needed. Please see the Forest Plan Monitoring Plan (Appendix A).

PC 501: The Forest Service should provide standards for how it was determined that selective thinning of trees below 30" (Alt A) and 12" (Alt D) would fail to perpetuate old growth habitat for associated species.

Sample Comments: *"Second, the DEIS fails to provide any objective standards for how it determined that selective thinning of trees below a maximum dbh (30" under Alt. A; 12" dbh*

under Alt. D) would fail to meet the purpose and need of perpetuating "habitats which support old growth dependent species.""

Response: The DEIS emphasized that Alternatives B and C provided the greatest degree of flexibility in their ability to achieve desired conditions. In the absence of natural disturbance or alteration of disturbance schedules such as fire and pathogens, our forest stands are becoming increasingly dense and increasingly vulnerable to catastrophic, stand-replacing events at a level much higher than under a natural disturbance regime. Therefore, if the Revised Forest Plan (Alternative E) allows for some ability to remove larger trees (under limited circumstances), the stand has a greater chance of growing to late seral conditions because of the reduction in competition among overly stocked trees.

PC 259: The Forest Service should support their conclusion that not implementing Alt B will result in inadequate owl habitat.

Sample Comments: *"DEIS also fails to take a hard look at impacts to spotted owls when it assumes, without any analysis or scientific support, that in the absence of implementing Alternative B, late seral closed canopy stands will not provide adequate habitat for owl (e.g., DEIS, p. 3-311)."*

Response: We acknowledge the comment and agree that the language in this section of the FEIS (Chapter 3/3.4.14Management Indicator Species/Environmental Consequences/Late Seral Closed Canopy Coniferous Forest Habitat (California spotted owl, American marten, and northern flying squirrel)/Alternative B) could be improved with information from the analyses that were conducted as part of the Terrestrial Wildlife and Habitat section (3.4.23) that included more detailed analyses. Therefore, we have updated the analyses in this portion of the MIS section with analyses conducted for the Terrestrial Wildlife and Habitat section. However, please refer to the Terrestrial Wildlife and Habitat section for additional analyses as well as additional supporting documentation for species accounts.

PC 291: The Forest Service should incorporate as a forest-wide standard a limit on reducing more than 10% of the live tree basal area through forest management in nesting and roosting habitat, in order to avoid degrading high quality nesting/roosting habitat to minimally adequate habitat, and to prevent loss of occupancy (Seamans and Gutierrez 2007).

Sample Comments: *"We suggest the following changes to the DLRMP to provide more meaningful protections for Spotted Owls: …Also, incorporate as a forest-wide standard a limit on reducing more than 10% of the live tree basal area through forest management in nesting and roosting habitat, in order to avoid degrading high quality nesting/roosting habitat to minimally adequate habitat, and to prevent loss of occupancy (Seamans and Gutierrez 2007). …"*

Response: The reference provided by the commenter (Seamans and Gutierrez (2007)) evaluated the relationship (correlation) between the amount of mature conifer forest in a territory, alteration of mature conifer forest, and spotted owl territory occupancy and breeding dispersal. One model used in this study evaluated if the amount of mature forest altered in an individual territory had long term effects on colonization and extinction probability. This model included three categorical levels of treatment size: no alteration, between 0 and 20 hectare (ha) alteration, and ≥ 20 ha alteration of mature conifer forest. The study did not evaluate reduction in basal area as

inferred by this comment nor the percent (10%) of a territory that experienced a reduction in basal area as inferred by this comment. As the authors point out: "However, our use of broad categories may not have adequately represented the effect of very large or very small changes in mature conifer forest. For example, alteration of 20 ha of mature conifer forest was considered the same as alteration of 80 ha." Therefore, we are unable to evaluate the merit of selecting 10% as the limit on reducing live tree basal area.

The desired conditions for basal area in the four major vegetation types is described in Table 2 of the Revised Forest Plan (Part 1: Vision/1.2 Desired Conditions/Ecological Sustainability/Forest Vegetation, Fuels, and Fire Management). We acknowledge that the Plan's standards and guidelines do not apply quantitative parameters for the amount (proportion) of required basal area retention. The reason for this omission is because we believe a one-size-fits-all approach on the landscape is not the most effective way to achieve our desired conditions for the major vegetation types (e.g., creation of early seral stage) and that this type of decision would be made on a project-specific basis when the scope, purpose and need, location, design, and sensitive resources are better understood. Still, we have added a number of new guidelines to the Plan to clarify the limitations on reducing basal area (and canopy cover), including a guideline that states that basal area would not be reduced beyond the level that would be required to maintain or improve habitat conditions for late seral-dependent wildlife species (*see* the Revised Forest Plan, Part 3: Design Criteria/3.1 Ecological Sustainability/Forest Vegetation, Fuels, and Fire Management Standards and Guidelines). This guideline is not the sole constraint on potential projects. Rather, when a project is developed, new science regarding basal area retention (and other relevant habitat metrics) may become available and additional resource protection measures may be included in the design of a project at that time.

PC 9: The Forest Service should improve the analysis of the effects to spotted owls.

Sample Comments: *"The DEIS (p. 3-230) states a goal of shifting forest types away from fir to pine-dominated forest, and away from dense forest to open forest. However, the DEIS does not divulge the adverse impacts of this on Spotted Owls, especially given that the Owls select highly dense, fir-dominated forests and tend to avoid pine-dominated forest (Verner et al. 1992, Irwin et al. 2007, Underwood et al. 2010 [Table 3 and Fig. 4]). The adverse impacts of this goal on Spotted Owls are simply not adequately addressed."*

Response: The Forest Vegetation section (3.4.11.) of chapter 3 of the FEIS states "The goal for forest vegetation in this plan is to restore forest structure and composition to conditions that are more resilient to future changes in climate and disturbance regimes." Where the Plan and FEIS describe a goal of restoring the early seral stage, it is stated in both the FEIS and Plan that this stage would be created in the mid seral stage and not in late seral habitat. However, we have clarified in the Plan that locations for early seral creation would be selected as part of an IDT process in which important factors such as landscape connectivity and proximity to PACs or detections of late and mid seral associated species would be considered (*see* the Revised Forest Plan, Part 3: Design Criteria/3.1 Ecological Sustainability/Forest Vegetation, Fuels, and Fire Management Standards and Guidelines). Where the FEIS and Plan describe that restoration would include reducing stand densities and fuels periodically over the life of the Plan, the reduction would be achieved by primarily targeting smaller understory trees for removal so as to enhance the larger overstory trees. However, some larger trees could be removed in order to

promote accelerated growing conditions for the stand and improve stand resiliency. Moreover, this restoration would be intended to reduce the risk of a stand replacing fire. We have added a guideline in the Plan to be clear that vegetation treatments would not reduce basal area (or canopy cover) of a stand beyond that which maintains or improves habitat conditions to support late seral associated species (*see* the Revised Forest Plan, Part 3: Design Criteria/3.1 Ecological Sustainability/Forest Vegetation, Fuels, and Fire Management Standards and Guidelines).

As stated in the FEIS, spotted owl research indicates that "forests can be too dense as well as too open" for foraging spotted owls (Irwin et al. 2007) such that extremely dense stands typically are not used for foraging (Verner et al. 1992).

White fir forests in the Sierra Nevada have become increasingly dense as well as common on the landscape. This shade tolerant species is now more abundant than some of the more fire-hardy species. The FEIS and Revised Forest Plan describe that restoration could include converting overabundant white fir types to more resilient pine or mixed conifer. To be clear, this conversion would not occur within late seral habitat and would include the conversion to mixed conifer, of which pine can be a major component. Restoration would not promote the homogenization of forest types on the landscape. Research in the Sierra Nevada has shown that spotted owls exist in mixed conifer forests that are also dominated by a mixture of pines (Seamans and Gutierrez 2007, Williams et al. 2011). The Forest Service considers suitable California spotted owl habitat to include pine forests such as east-side pine.

The Plan does not prescribe any restoration activities that could affect (positively or negatively) the spotted owl. Restoration projects would be evaluated at the project-level when the scope, location, sensitive resources, and potential resources are better understood.

PC 292: The Forest Service should add forest-wide standards and guidelines allowing and encouraging active snag creation in forest areas that otherwise meet the above definition of suitable California Spotted Owl nesting and roosting habitat but are deficient with regard to large snag basal area.

Sample Comments: *"We suggest the following changes to the DLRMP to provide more meaningful protections for Spotted Owls: …Add forest-wide standards and guidelines allowing and encouraging active snag creation in forest areas that otherwise meet the above definition of suitable California Spotted Owl nesting and roosting habitat but are deficient with regard to large snag basal area..."*

Response: We agree with the comment that snags are an important habitat element for spotted owl and other wildlife in the LTBMU. The importance of this habitat component is already emphasized in the Plan, especially in the desired conditions (the drivers of the Plan) which reflect the conditions we strive to achieve. The desired condition for spotted owl habitat in PACs is described as having "higher than average levels of snags (preferably larger than 45 inches dbh) for the stand type…"(*see* the Revised Forest Plan, Part 1: Vision/1.2 Desired Conditions/Ecological Sustainability/Biological Resources/Protected Activity Centers and Home Range Core Areas (PACs and HRCAs)). In addition, we have amended language in the Plan to emphasize the active creation of snags (rather than tree removal) where trees larger than 30 inches in diameter are removed (*see* Part 3: Design Criteria/3.1 Ecological Sustainability/Forest Vegetation, Fuels, and Fire Management Standards and Guidelines). We believe all of the

desired conditions, strategies, objectives, and standards and guidelines described in the Plan promote the creation and protection of snags in a way that benefits many species that prefer this habitat component while also allowing management of the LTBMU for multiple uses.

PC 66: The Forest Service should consider an alternative like the 2001 Framework decision and 1) retains large trees; 2) allows for thinning of small to medium size trees; and 3) limits recreational expansion into wildlife habitat.

PC 251: The Forest Service should provide canopy cover minimums for late seral "open" habitat, as were previously found by the CASPO Guidelines EA and 2001 Framework decisions.

PC 290: The Forest Service should incorporate, as forest-wide standards, requirements to retain, in all current suitable Spotted Owl nesting and roosting habitat as defined in USDA (2001b [Volume 3, Table 4.4.2.1c]), at least 185-350 square feet per acre of live tree basal area, at least 20-30 square feet per acre of basal area in snags over 15 inches in diameter, and at least 70% canopy cover, consistent with the description of suitable habitat in the scientific literature (Verner et al. 1992, USDA 2001b [Vol. 3, Table 4.4.2.1c], Bond et al. 2004, Irwin et al. 2007).

Sample Comments: *"We suggest the following changes to the DLRMP to provide more meaningful protections for Spotted Owls: • Incorporate, as forest-wide standards, requirements to retain, in all current suitable Spotted Owl nesting and roosting habitat as defined in USDA (2001b [Volume 3, Table 4.4.2.1c]), at least 185-350 square feet per acre of live tree basal area, at least 20-30 square feet per acre of basal area in snags over 15 inches in diameter, and at least 70% canopy cover, consistent with the description of suitable habitat in the scientific literature (Verner et al. 1992, USDA 2001b [Vol. 3, Table 4.4.2.1c], Bond et al. 2004, Irwin et al. 2007)."(PC 290)*

"As discussed, the draft Plan does not provide any canopy cover minimums for late seral "open" habitat, as was previously found by the CASPO Guidelines EA and 2001 Framework decisions to be necessary to avoid significant adverse effects on late seral species." (PC 251)

"As discussed throughout our comments the draft Plan DEIS does not consider an alternative that reflects the full range of environmental resources uses and values that could be produced. For example, the DEIS does not consider an alternative that corresponds to the 2001 Framework decision, which generally allows substantial forest thinning of trees up to 20" dbh (USDA Forest Service 2001)." (PC 66)

" The Rule requirement is consistent with NEPA's purpose that a full range of alternatives must be considered in relation to the most critical issues of forest management, including the preservation of wildlife viability. This range would be achieved by the Forest Service considering an alternative that 1) retains large trees; 2) allows for thinning of small to medium size trees; and 3) limits recreational expansion into wildlife habitat. In our view, Alternative D has been artificially constructed with unduly narrow constraints and is intended as a "dead-on-arrival" straw man choice rather than one of several rigorous attempts to balance wildlife protection with fire and forest health needs by exploring (for example: a 16" and a 20" cut limit coupled with higher levels of planned and managed fire) and modeling explicit fire behavior and forest health tree removal outcomes with these limits." (PC 66)

Response: The 2001 Framework was determined to be infeasible to implement because of the inability for adaptive management and was replaced by the 2004 SEIS. The LTBMU desired conditions for spotted owl PACs and other late seral associated species are based on those

described in the 2004 SEIS. See Section 2.5 in the FEIS for further discussion of the limitations of the 2001 Framework decision.

Refer to response to PC 253 for a discussion of estimating canopy cover reduction at the Forest Plan level and refer to responses to PCs 250, 254, 261 and 262 for a discussion of canopy cover definitions and potential modifications.

PC 250: The Forest Service should evaluate the definition of closed canopy habitat.

PC 254: The Forest Service should describe what is meant by moderate capability reproductive habitat and should cite to any established literature indicating that these late seral species have reproduced successfully in mixed conifer habitat at the lower margins of 4M.

Sample Comments: *"From a biological perspective, closed canopy forest would mean CWHR condition D, with canopy cover above 60 percent which is the required nesting habitat for owls and goshawks and, in mid-elevation forests such as in the mixed conifer forests of the Tahoe Basin, required denning habitat for marten. Yet the DEIS assumes the critical canopy threshold as either 40 percent or 50 percent, thereby providing no relevant information about the actual reproductive habitat that exists for late seral species i.e. late seral forest with canopy cover over 60 percent -- nor the amount of this habitat that will be reduced by Alternative B over time." (PC 250)*

"the DEIS/BE fails to take a hard look at project impacts by characterizing CWHR 4M habitat as nesting or denning habitat of "moderate capability" for late seral, closed canopy species. The DEIS does not describe what is meant by moderate capability reproductive habitat and does not cite to any established literature indicating that these late seral species have reproduced successfully in mixed conifer habitat at the lower margins of 4M" (PC 254)

Response: Table 3-42 in the Management Indicator Species section of the FEIS (Chapter 3/3.4.14) describes late seral closed canopy forest as 5M/D as well as 6. With reference to meeting the needs of the species through our classification of habitat, Table 1 in Moriarty et al. (2011) describes high quality marten reproductive habitat as M (40-60%) and D (> 60%) canopy closure as well as 4 and 5 size classes. Marten have been found denning with kits in 4M habitat in the LTBMU. To clarify part of this comment related to marten habitat, the LTBMU would not be considered mid-elevation mixed conifer habitat; the LTBMU straddles the crest of the Sierra Nevada and ranges in elevation from 6,225 feet at lake level to 10,881 feet at Freel Peak. Please see the Plan and FEIS Forest Vegetation Section for more information on the major forest types and elevation. The elevation, geography, and topography of the LTBMU influence the major forest types and features of these types.

The Plan does not assume any critical thresholds for canopy cover. However, we do understand the value of dense canopy and mature forest structure to late seral species and have amended many of our standards and guidelines, and strategies to clarify the protection of this habitat. We have also increased the desired condition for PAC canopy cover to 70%. In terms of canopy cover, although we do have stands with ≥70% canopy cover, many of the forested areas here don't have as much as 70% canopy cover in mature classes simply (*see* Forest Vegetation section of the FEIS Chapter 3). Many of the PACs in the LTBMU have average canopy cover between 40 and 59%.

Moderate capability habitat is defined by CWHR and is described in the BE.

For additional information on CWHR, please see responses to comments PC 201, 74, 218, and 221.

PC 252: The Forest Service should clarify the difference between open and closed canopy for wildlife.

Sample Comments: *"the DEIS lacks critical clarity in failing to identify what constitutes open versus closed canopy, terms that have no understood biological meaning for wildlife outside of the DEIS's conflicting definitions."*

Response: Table 3-42 in the Management Indicator Species section of the FEIS (Chapter 3/3.4.14) describes late seral closed canopy forest as 5M/D and 6 and late seral open canopy habitat as 5S/P. We acknowledge that our definition of open and closed canopy habitat described for terrestrial wildlife using CWHR and the definition for open and closed canopy forest types is slightly different and wasn't clearly described in the DEIS. We have included a description of this difference in the FEIS (Chapter 3/3.4.22/Terrestrial Wildlife).

PC 253: The Forest Service should assess how much late-seral closed canopy habitat will be lost due to forest thinning.

Sample Comments: "*Here, the public does not have adequate information about whether the Forest Service is considering 4M or 5M habitat to be "open" or "closed" or whether 5M habitat should be considered partly within the "late seral - closed canopy" definition or not. This is particularly relevant due to the BE's assertions that both spotted owl and marten can find acceptable nesting and denning habitat in 4M and 5M habitats. While we strongly disagree with that assertion, the DEIS does not even allow an assessment of how much of this habitat will be lost due to forest thinning."*

Response: It is not possible to estimate the habitat loss since the Revised Forest Plan does not prescribe projects or management activities. Furthermore, alteration of habitat is not always considered loss. CWHR types (including 4M and 5M) and the lumping of these types into open and closed canopy and the various seral stages are described in an additional table (3-35) in section 3.4.11 (Forest Vegetation) of the FEIS. Section 3.4.23 (Terrestrial Wildlife and Habitat) includes additional clarifying information for the distinction in CWHR types as they are used in model output.

Regarding the results of the SPECTRUM model, we incorrectly stated in the DEIS that late seral closed canopy would decrease as a result of thinning this seral stage to create late seral open canopy habitat. We also incorrectly interpreted the model output in the DEIS. We have reviewed and clarified the model data source and parameters (prescriptions, disturbances, restrictions) and can now more accurately explain the model output. The model output indicates that during a fifty year period following Plan implementation (excluding decade 1) late seral closed canopy forest for all of the major forest types combined would not change from current condition under Alternatives B and E. We have provided additional clarifying information for the SPECTRUM model in section 3.4.11 (Forest Vegetation) of the FEIS. We have also described predicted trends for the seral stages based on model output in section 3.4.23

(Terrestrial Wildlife) of the FEIS and in the Biological Evaluation for Terrestrial Wildlife Species.

PC 102: The Forest Service should identify and protect wildlife habitats and corridors so native wildlife may thrive in changing climatic conditions.

PC 302: The Forest Service should provide wildlife migration/movement corridors.

Sample Comments: *"Wildlife corridors need to be addressed." (PC 302)*

"species and ecological communities will move in response to climate change. The Forest Service should facilitate these movements by working to connect discontinuous areas of similar terrestrial and aquatic habitat and by establishing protections for likely movement corridors. (See, e.g., USDA Forest Service 2010, p. 27–28: "Collaborate with partners to develop land management plans that establish priority locations for maintaining and restoring habitat connectivity to mitigate effects of climate change. Seek partnerships with private landowners to provide migration corridors across.") In establishing these mitigation corridors, the Forest Service should ensure there is a continuous pathway between nearby core areas." (PC 102)

"The plan should provide corridors connecting protected areas, such as the Granite Chief and Desolation Wildernesses, so that native wildlife stressed by climate change may move to higher, cooler temperatures if this is indicated by the knowledge we have based on our experience and best practice;". (PC 102)

Response: We agree. The Plan contains a number of desired conditions, strategies, objectives, and standards and guidelines related to habitat connectivity, including movement corridors. The Plan has also been revised to include measures specific to climate change needs.

PC 255: FS should recognize deficiencies in CWHR system.

Sample Comments: *"The California Wildlife Habitat Relationship System (CWHR), the basic classification system in the BE/DEIS used to establish baseline habitat conditions for late seral species, is a coarse system that fails to take into account the wide range of habitat conditions embodied by each of the habitat classes. This failing of the CWHR system has been identified by other scientists: The forest is broadly categorized using the dominant tree size class, and canopy cover is approximated through interpretation of aerial photographs or modeled indirectly with the Forest Vegetation Simulator into broad cover classes (see limitations of this approach in chapter 14 under "Canopy Cover and Closure"). These are rough estimates of a forest's habitat taken at a fixed point in time and do not consider features such as snags, down wood, or understory diversity that are often linked to wildlife use. Consequently, the use of CWHR for making reliable, project level predictions on the potential habitat impacts of forest management activities on a wildlife community is limited (North 2012, p. 75)."*

Response: We chose to use the California Wildlife Habitat Relationships (CWHR) system because it a well-established, standardized system of wildlife habitat definitions and sampling protocols that has been tested and used for wildlife habitat monitoring by California Department of Fish and Game (Wildlife), the Forest Service, and many state and federal partners for over 20 years. Habitat trend data using CWHR definitions and protocols exists.

The CWHR System includes a standardized habitat classification scheme for California, containing 59 habitats, structural stages for most habitats, and 124 special habitat elements, which is summarized in Mayer and Laudenslayer (1988). The 59 wildlife habitats in the CWHR System (27 tree, 12 shrub, 6 herbaceous, 4 aquatic, 8 agricultural, 1 developed, and 1 nonvegetated) are used with predictive models for terrestrial vertebrate wildlife species. In addition, stages and special habitat elements are defined. Stages are defined for virtually all habitats. A stage is a combination of size and cover class for tree-dominated habitats, age and cover class for shrub habitats, height and cover class for herbaceous habitats, and depth and substrate for aquatic habitats. A field sampling protocol is well established for determining stages in all vegetated habitats. A complete description of the CWHR System can be found at http://www.dfg.ca.gov/biogeodata.

The CWHR System was initiated in the early 1980s to provide a formalized and generally agreed-upon compendium of knowledge about the distribution and habitat preferences of California's terrestrial vertebrates (Graber 1996). CWHR has been used for several large wildlife resource conservation efforts including California's GAP effort, the legislatively authorized Timberland Task Force effort, and the Sierra Nevada Framework and Forest Plan Amendment efforts. It is one of the primary biological data sets used in an assessment of California's biodiversity for the "Atlas of the Biodiversity of California." CWHR is used in sustained yield planning efforts by several large private timber companies and is part of regulations adopted by the California Board of Forestry.

PC 266: The Forest Service should consider how their literature citations for goshawk are applied.

Sample Comments: *"The DEIS Fails to Take a Hard Look at Impacts of the Plan on Northern Goshawk. For similar reasons as for marten and owl, the DEIS fails to take a hard look at how logging will adversely affect northern goshawk. Instead, the DEIS makes no distinction between nesting and foraging habitat for goshawk, and wrongly assumes that goshawks may nest successfully in mixed conifer, western slope forests down to 40 percent canopy cover. This approach directly contradicts the most relevant study, Keane (1999), which found that goshawk nest areas in Lake Tahoe (0.25 acre) characterized by high canopy closure (mean=70.4 percent). The literature cited in the BE on Goshawk demonstrates that forest thinning has the potential for significant effects on the nesting success of this species, yet the DEIS provides no analysis of how goshawks may survive over time, given the extent of logging proposed – including in PACs – and without any adaptive management monitoring plan in place to measure the cause and effect impacts."*

Response: Many of the PACs in the LTBMU have an average cover below 70% and still have reproduction by goshawk pairs. However, we agree that canopy cover is an essential part of forest structure for goshawk and have increased our desired condition for canopy cover to 70%. In terms of effects analysis, impacts on goshawks are described in the FEIS and in detail in the Biological Evaluation.

PC 258: The Forest Service should consider how their literature citations for California Spotted Owl are applied.

Sample Comments: *"The DEIS also fails to take a hard look at the available science in asserting that owl nesting may be successful in forests with 30 percent canopy, based on Chatfield, 2005. This study did not in fact find that owls may reproduce successfully in PACs with 30 percent canopy coverage. Instead, the 30 percent coverage in Chatfield 2005 only refers to dominant late seral trees; the remaining sub-dominant canopy in these forests were over 70 percent. Further, subsequent studies in the same El Dorado study area have determined that owls require 70 percent overall canopy for successful reproduction. See Seamans (2005)."*

"Finally, the DEIS mischaracterizes the existing setting for owls in describing their current regional population status as stable and fails to address recent studies showing owl disappearance from logged forests in Plumas and El Dorado County."

"The DEIS (pp. 3-310 and 3-311) claims that late-successional/old-growth stands with high basal area and high canopy cover—i.e., California spotted owl nesting and roosting habitat, such as that found in PACs and HRCAs (Verner et al. 1992, Bond et al. 2004, Irwin et al. 2007)—is at "a higher risk of vulnerability from bark beetles" and other tree mortality effects stemming ostensibly from dense forest conditions. The DEIS claims that restrictions on commercial logging in such Owl nesting/roosting habitat in Alt. A will "result in a more rapid decline in late seral conditions" than the intensive-logging alternatives, Alt. B and Alt. C. A similar statement is made on p. 3-312 of the DEIS with regard to Alt. D ("…dense stand conditions under this alternative could have disastrous consequences on the longevity and health of this habitat"). However, there are major analytical problems with these statements. First, the DEIS provides no citations to any scientific studies or other scientific analysis to support these statements. Second, the statements make no sense in light of the fact that, on the very same pages, the DEIS states that, in "late seral closed canopy forest", Alt. A would result in an "increase by approximately 9% over the next 30 years" (DEIS, p. 3-310 [emphasis added]), and Alt. D would result in an "increase by approximately 7%...over the next 30 years" in such high-quality Spotted Owl habitat (DEIS, p. 3-312 [emphasis added]). In contrast, the DEIS states that "late seral closed canopy forest" is expected to decline by 15% and 22% for Alt. B and Alt. C, respectively (DEIS, pp. 3-311 and 3-312). Third, these pages in the DEIS completely fail to account for, address, or acknowledge the following: a) high-severity fire is a minority of fire effects currently in Sierra Nevada conifer forests, and most fire effects are low/moderate (Odion and Hanson 2006, Odion and Hanson 2008, Collins et al. 2009, Collins and Stephens 2010); b) mixed-severity fire does not reduce Spotted Owl occupancy (Roberts et al. 2011, Bond et al. 2012 in press); c) mixed-severity fire increases Spotted Owl reproductive output by 60% (Roberts 2008 [43% moderate/high-severity fire, on average]); d) Spotted owls preferentially select unsalvaged moderate- and high-severity fire patches for foraging (Bond et al. 2009); e) long-unburned forests (i.e., those that have "missed" multiple fire return intervals) burn mostly at low/moderate-severity in the Sierra Nevada, and do not have higher levels of high-severity fire than less fire-suppressed forests (Odion et al. 2004, Odion and Hanson 2006, Odion and Hanson 2008, Odion et al. 2010, Miller et al. 2012, van Wagtendonk et al. 2012); and f) current snag levels on the LTBMU are well below the optimal levels for Spotted Owls (i.e., owl habitat would benefit from additional snag recruitment from tree mortality), as discussed in detail above.

"The DEIS fails to adequately analyze the recent scientific evidence showing that all three California spotted owl demography study areas within national forest lands in the Sierra Nevada (i.e., within areas subjected to intensive mechanical thinning and post-fire logging) have lambda

values below 1.0 now (lambda values below 1.0 are associated with declining populations), while the only study area that is in protected forest (Sequoia/Kings Canyon National Park) has a lambda value above 1.0 (lambda values above 1.0 are associated with increasing populations) (see Keane 2011, Sherer et al. 2011, Gutierrez et al. 2012, and Munton et al. 2012)."

"In light of recent science indicating that California Spotted Owls benefit from closed-canopied old forest for nesting and roosting and preferentially select unlogged moderate-severity and high-severity fire areas for foraging (Bond et al. 2009), and that mixed-severity fire (with an average of 32% high-severity effects) does not reduce California Spotted Owl occupancy in the Sierra Nevada, unlike post-fire logging (Bond et al. 2012, in press), the DEIS fails to articulate a sound or clear ecological rationale for intensively managing the suitable Spotted Owl habitat (including PACs AND HRCAs) to reduce stand density and canopy cover, as well as preclude high-severity fire in all fuels treatments and prescribed fire."

"Rather than address the issue of habitat loss, the Forest Service seems to be suggesting that high-severity fire will harm the owl and that therefore areas must be logged in order to prevent high-severity fire. The only cite that is provided for the assertion that "high-severity fires can have a pronounced negative effect on spotted owl populations" is Lee and Irwin 2005. However, Lee and Irwin 2005 is simply a modeling effort that assumed that fire is harmful to owls – the study itself did not investigate what the actual relationship is between fire and owls. "

Response: We agree that 30% canopy cover would be relatively low for successful nesting of owl pairs. We have updated the FEIS and BE species accounts and analyses of effects to indicate the potential effects of canopy reduction on spotted owls and other late seral associated species. We have also revised and created standards and guidelines to clarify our intent to protect late seral closed canopy habitat and PAC canopy closure. The desired condition for PAC canopy closure has been increased to 70%. Although there is a standard in the Plan that canopy may be reduced below the desired condition, this would occur where needed to improve habitat and/or set the trajectory for the improvement of late seral closed canopy habitat. That said, many of the PACs in the LTBMU, and with reproductively active pairs have average canopy cover less than 70%.

The discussion of heterogeneity and spotted owl habitat use has been removed from the FEIS and modified in the BE to better reflect the benefits of habitat heterogeneity within the relevant context given that the benefit is dependent on locations and type of habitat structure that comprises a heterogeneous landscape.

Regarding the results of the SPECTRUM model, we incorrectly stated in the DEIS that late seral closed canopy would decrease as a result of thinning this seral stage to create late seral open canopy habitat. We also incorrectly interpreted the model output in the DEIS. We have reviewed and clarified the model data source and parameters (prescriptions, disturbances, restrictions) and can now more accurately explain the model output. The model output indicates that during a fifty year period following Plan implementation (excluding decade 1) late seral closed canopy forest for all of the major forest types combined would not change from current condition under Alternatives B and E. We have provided additional clarifying information for the SPECTRUM model in section 3.4.11 (Forest Vegetation) of the FEIS. We have also described predicted trends for the seral stages based on model output in section 3.4.23

(Terrestrial Wildlife and Habitat) of the FEIS and in the Biological Evaluation for Terrestrial Wildlife Species. For a discussion of the regional status of spotted owls, please see response to PC 521. Regional trend information has also been added to the FEIS and BE. For a discussion of the potential for a decline in late seral conditions with limited ability to treat late seral stands, please see the Forest Vegetation section of the FEIS Chapter 3 and Table 2-3.

We have revised the species account for spotted owls and effects analysis in the FEIS regarding fire effects (and vegetation treatment effects) on spotted owls to more accurately reflect current research findings.

It appears that we were not clear in our discussion of PAC restoration in the DEIS (p. 3-448) since the commenter interprets the language used to infer that the USFS proposes to convert nesting and roosting habitat to foraging habitat. On the contrary, restoration of PACs would be intended to improve nesting habitat. The paragraph creating the confusion, and citations used, was intended to report research findings that forest stands can be too dense (as well as too open) for a variety of spotted owl life history needs including nesting and foraging. We have removed this paragraph so that further confusion is avoided.

PC 521: The Forest Service should consider the regional status of spotted owls and why the proposed Plan will not lead to a trend toward federal listing or jeopardize the persistence of spotted owl in the Tahoe Basin.

Sample Comments: *"As discussed, the draft Plan does not ensure the viability of spotted owls in the Tahoe Basin because it proposes significant amounts of logging in owl habitat that studies show will render much of this habitat unsuitable for owls. Meanwhile, the most recent monitoring for owls is showing that implementation of the 2004 Framework fuel reduction logging may already be having negative population effects on owls at the regional level."*

"The population of owls has been monitored on four study areas in the Sierra Nevada over the last 20 years. The results of the three demographic studies on national forests in the Sierra Nevada confirm the existence of a decline in the population over the last 20 years (Keane et al.2011, Gutiérrez et al. 2012, Keane 2012, Munton et al. 2012, Scherer et al. 2012). In contrast, results from the single study in the Sierra Nevada on national park land indicate that the population is stable to increasing."

"The biological evaluation (Wildlife BE) and DEIS for the LTBMU Forest Plan revision fails to explain how, given the backdrop of population declines, the adverse impacts to owl habitat being proposed – coupled with the paucity of high quality habitat currently in the landscape – will not lead to a trend toward federal listing or jeopardize the persistence of spotted owl in the Tahoe Basin."

Response: The Revised Plan focuses on the restoration of the major ecosystems within the Lake Tahoe Basin Management Unit. Part of these restoration efforts will be accomplished by conducting vegetation treatments. As stated in the Forest Vegetation section of the FEIS (Chapter 3), "the goal for forest vegetation in this plan is to restore forest structure and composition to conditions that are more resilient to future changes in climate and disturbance regimes." The proposed Plan does not authorize or prescribe specific restoration projects to

achieve this goal nor assign locations for projects. In other words, the Plan does not prescribe activities that may or may not affect sensitive resources, including wildlife.

The late seral, dense forests in the Sierra Nevada are at risk to stand-replacing fire because of heavy fuel loading (Roberts and North 2013). Catastrophic fire is considered the greatest potential threat to the California spotted owl (DOI 2006).

In the Sierra Nevada, between 1999 and 2002, 18 spotted owl PACs were severely affected by wildfire and could be considered "lost" (USDA Forest Service 2004, SEIS pp. 145). From 2003 to 2008, a GIS exercise by the USFS found that 33 PACs had more than 75% of their area burned at either high or moderate severity, and rendered unusable by spotted owl, due to 8 major wildfires on NFS lands (see Table 1 and footnotes in Yasuda Declaration on October 21, 2008 for *Sierra Forest Legacy et al. vs Mark Rey, Tuolumne County Alliances for Resources and Environment et al., California Ski Industry Ass'n, and Quincy Library Group).* The Moonlight fire on the Plumas National Forest burned approximately 65,000 acres (46,000 on National Forest System lands) in September 2007. Based on fire severity assessment methods and severity maps (Safford et al. 2007, Miller 2007, Miller and Thode 2007), a total of approximately 43,938 acres (National Forest and private) burned at high and moderate-high severity (Basal Area Mortality > 50%); approximately 31,682 acres of forest vegetation was burned at high and moderate-high severity on National Forest system lands (Rotta 2011). This fire resulted in the immediate long-term loss of 17 California spotted owl PACs and HRCAs, as well as the removal of 96% of the suitable nesting habitat and 86% of the suitable foraging habitat within the landscape.

The results of simulation modeling research summarized in Keane (2013) suggests that some fuels treatments can reduce fire risk and with minimal effects on owl reproduction, and may have long-term benefits of reducing wildfire risk that outweigh short-term effects of treatments. Seamans and Gutiérrez (2007a) found that alteration of ≥20 hectares (49 acres) of mature forest in spotted owl territories may decrease the probability of colonization. The results from a separate opportunistic case study of fuel reduction treatments (mechanical thinning of understory trees and/or prescribed fire) on PAC occupancy and owl reproduction in the Stanislaus National Forest indicates that such treatments can be compatible with owl use and reproduction as owls continued to occupy the treated PACs and produce young (Rich 2007). In the Plumas National Forest, where the Moonlight fire resulted in the loss of PACs, fuel reduction treatments are occurring in the Meadow Valley Project area. Of the seven original confirmed pairs of spotted owls, there were 3 confirmed pairs, one unconfirmed pair, and one barred owl in the project area in 2012 (Keane, pers. comm., 2013). The data cannot conclude cause for the change in spotted owl occupancy but show the association of treatment and change in spotted owl occupancy as well as occupancy of a strong owl competitor. The technique used in the Meadow Valley project, DFPZ (Defensible Fuel Profile Zone) is currently not practiced on the LTBMU but the results from this study demonstrate that although owls could incur short term impacts from fuel reduction treatments, this risk outweighs the potential consequences of losing the habitat to a stand replacing fire like the Moonlight fire which resulted in the immediate long-term loss of 17 California spotted owl PACs and HRCAs in the same National Forest. In their 12-month finding to not list the California spotted owl under ESA, the USFWS (2006) recognized that "the primary technique of fuels reduction, which is thinning understory trees with mechanical equipment and/or prescribed fire, may have detrimental effects on spotted owl habitat in the

short term, but may favor development of habitat in the longer term, and may reduce the likelihood of catastrophic fire that could substantially degrade or eliminate habitat". It should be noted that the slide presented by John Keane (Figure 7) and used by the commenter was flawed as presented. There was a mistake in the calculation of confidence intervals around the annual estimates of realized population change because an incorrect error term was used (Keane and Conner 2012). Use of the correct error term does not change the annual point estimates, but fully accounts for the variation in these estimates and results in larger confidence intervals (Keane and Conner 2012).

The 2001 and 2004 Framework allowed for potential short term modifications to habitat and impacts to reduce fuels and the risk of stand replacing, catastrophic fires and the USFWS indicated that short term effects of treatments could be incurred for the long term benefit of reducing the risk of catastrophic fire in owl habitat. The US Fish and Wildlife Service (USFWS) determined in the 12-month finding for petition to list the California spotted owl as threatened or endangered (2006) that the species did not warrant listing at that time and noted that wildfire was a major threat facing this species. At the time of the 12-month finding, results from the draft meta-analysis reported in Blakeseley et al. (2006) indicated that the Lassen National Forest population could be experiencing a potential population decline but at that time the best available data indicated that the California spotted owl populations are stationary throughout the Sierras and there was no strong evidence for decreasing linear trends in lambda.

A meta-analysis of spotted owl population data at four demography study areas (Sierra National Forest, Eldorado National Forest, Lassen National Forest, and Sequoia-Kings Canyon National Park) from 1990 to 2005 concluded that, with the exception of the Lassen study area, owl populations were stable, with adult survival rate highest at the Sequoia-Kings Canyon study site (Blakesley et al. 2010). The 95% confidence limit for lambda in the Lassen study area ranged from 0.946 to 1.001 (estimated value 0.973), which barely includes 1, and the analysis estimated a steady annual decline of 2 – 3% in the Lassen study population between 1990 and 2005 (Blakesley et al. 2010).

Recent analyses from the same four demography study areas suggest that there may be a concern for decline in spotted owls within the three National Forest demography study areas in the Sierra Nevada. A preliminary analysis conducted by Sierra Nevada Adaptive Management Project (SNAMP) in 2011 indicates that the owl population on the Eldorado National Forest may be declining but the 95% confidence interval for lambda overlaps one (1) (Gutierrez et al. 2012). Tempel and Gutiérrez (2013) conclude that data from the Eldorado Density Study Area (60% USFS managed land in Eldorado National Forest and 40% private land managed timber companies) suggest a 31% decline in the spotted owl population size from1993-2010 but again, the 95% confidence interval slightly overlapped one (1) for all parameters. Using data for an 18-year study period, Conner et al. (2013) found that the different estimators for 'realized population change' (expressed as 'delta' - ratio of population size at end time to initial population size) indicated population declines of 21-22% for the Lassen study area and 11-16% for Sierra study area, and an increase of 16-27% for Sequoia-Kings Canyon study area. The annual rate of population change (lambda) also showed a declining trend. However, similar to the analyses conducted by Tempel and Gutiérrez (2013) the confidence intervals overlapped 1.0 for all estimators and all study areas. As stated in Conner et al. (2013) "If a population is growing (lambda greater than 1), managers cannot tell whether the growth is from internal

recruitment or immigration. Likewise, if a population is declining, managers cannot determine whether the declines are due to deaths within the population or emigration. Thus, additional information on specific vital rates is necessary to understand what is driving lambda and ultimately, the mechanisms driving population dynamics." Causation for any potential decline in occupancy is unknown.

Even if there are declining population segments in some portions of the owl's range, there is no clear evidence that the cause of such potential declines is recent vegetation treatment on National Forest System lands. Some factors adversely affecting the owl, such as harsh winters and urban encroachment could be factors. Another increasingly important factor is the barred owl (*Strix varia*), which displaces spotted owls from primate habitat. Barred owls were previously abundant in more northern latitudes, but have continued their southward expansion into the Sierra Nevada. As a result, barred owls have been out-competing spotted owls from British Columbia, Canada to central California. This is a particularly important factor in the Lassen National Forest study area where barred owls and spotted-barred hybrids have been documented. Gutierrez (2011) has stated that the cause of the potential decline in the Eldorado National Forest population is not known. Keane (2013) states that the cause(s) of the suspected declines is not known, but later goes on to say that timber harvest, fire suppression, and the expansion of the barred owl could be a factor.

On the LTBMU we have predominantly moderate habitat for the spotted owl as indicated by the high proportion of moderate habitat in PACs (see Biological Evaluation for Terrestrial Wildlife Species), areas that have been selected by owls to nest and that have been subsequently protected. Still, the approach under the proposed Plan is one in which PACs would be protected as well as restored for the benefit of the species, to improve moderate capability habitat, sustain high capability habitat, and reduce the risk of a massive incident of catastrophic fire, drought stress, or insect outbreak.

We realize that the potential for the killing of trees larger than 30 inches in diameter, reducing canopy cover, and restoration of PACs seems counter to the protection of the habitat components very strongly associated with spotted owl habitat. Our intention is to protect these habitat features into the future for sustained habitat quality, and improved habitat quality for spotted owls and other sensitive terrestrial wildlife species. We have revisee the Plan (Alternative E) and the FEIS to clarify that wildlife needs would be key drivers in the development of these projects and that all projects would be developed through the work of an interdisciplinary team and be subject to NEPA.

For a discussion of viability, please refer to Appendix E. We would like to clarify that the San Bernardino spotted owl population is still in existence although no demography studies have been conducted since the mid-1990s.

PC 237: The Forest Service should ensure the viability of cavity nesting birds.

Sample Comments: *"I am especially concerned about cavity nesting birds. In the area where I live, a checkerboard of private and Forest Service lands, near the Mt. Rose Highway, I have noticed over the years that with the clearing of much of the standing dead trees how quiet it has become. Ten and twenty years ago, sitting on my deck I constantly heard the sounds of*

chickadees and nuthatches and saw brown creepers moving along tree trunks. Today it is a real treat when I see one, because these birds that were once ubiquitous are not frequently seen in our neighborhood. I understand that this is only anecdotal evidence, and I fully accept the importance in a residential area to manage the potential fuel loads. For more rare species in undeveloped areas, however, it seems that fewer compromises need be made in terms of maintaining habitat for birds."

Response: Our measures are designed to protect habitat for wildlife. For an evaluation of species viability, please see Appendix E.

We have greater flexibility outside the WUI where public safety concerns are fewer. In this area, many projects would be tailored towards achieving wildlife habitat desired conditions. We have a guideline in the Plan emphasizing that wildlife objectives increase in priority with increasing distance from communities and proximity to specific wildlife resources (e.g., nest and/or roost sites) (*see* Section 3: Design Criteria/3.1 Ecological Sustainability/Forest Vegetation, Fuels, Fire Management Standards and Guidelines). Moreover, we have a number of standards and guidelines (and a desired condition) related to the retention of snag habitat and consideration given to installing nest boxes for cavity nesting birds when snags are absent from a project site (on a project-specific basis). We have revised our standard related to restoration of habitat following a wild fire to more clearly articulate the role of wildlife objectives/concerns (including cavity nesting birds) in developing such projects and determining implementation timelines (*see* Section 3: Design Criteria/3.1 Ecological Sustainability/Biological Resources Standards and Guidelines/Conservation of Species and Habitat).

PC 247: The Forest Service should ensure viability of willow flycatcher.

Sample Comments: *"The draft Plan proposes to drop willow flycatcher as an MIS species for wet meadows. As discussed above, the habitat needs of the flycatcher and MIS designated species, Pacific tree frog, are very different, and thus activities such as vegetation removal that might not affect the tree frog could have significant effects on the flycatcher. In the absence of MIS monitoring for this species, the potential management effects of management activities on flycatchers cannot be measured and viability not ensured."*

Response: Willow flycatcher, a state-listed species, was not selected as the MIS for wet meadows because it is a rare species that has been detected in few areas on the LTBMU. It would not be expected to be found on all or even most of the wet meadows on the LTBMU nor in the Sierra Nevada. Because willow flycatcher does not always occur where one would expect based on habitat quality and quantity, it is likely that factors other than the effects of Forest Service management activities on habitat are influencing its population trends and relationship to habitat changes.

The willow flycatcher is a Forest Service Sensitive (FSS) species. These species are managed by Forest Service policy to conserve the species so that they do not become endangered or threatened because of Forest Service actions. It is also Forest Service policy to manage NFS lands such that habitats of FSS species remain well distributed throughout their geographic range on NFS lands (FSM 2670.22). In addition, as a Forest Service Sensitive species, current monitoring data will continue to be collected and used to inform management, although the level

and type of wildlife (and other) monitoring will depend on available funds, evolving protocols, available partnerships, etc. Monitoring of and survey for TES species have objectives that are different than the regulatory requirement for MIS (monitoring of population trends and determining relationship to habitat changes). These different objectives lead to differences in appropriate monitoring scales, protocols, sampling designs, etc. In addition, it is often difficult to determine population trends and relationship to habitat changes for rare species, such as TES species, because of difficulties in obtaining statistically significant sample sizes.

As the forest plan is implemented through projects, Forest Service policy (FSM 2670.32) states that all programs and activities will be reviewed as part of the NEPA process to determine the potential effect of such proposed activities on sensitive species. Further, policy states that the impacts of such activities must be avoided or minimized and that any permitted activities must not result in a loss of viability or create significant trends toward Federal listing. For an evaluation of viability, please see Appendix E.

PC 245: The Forest Service should ensure viability of Sierra Nevada yellow- legged frog.

Sample Comments: *"In our view, MIS monitoring for the Pacific tree frog will not be adequate to determine impacts to the Sierra Nevada yellow-legged frog due to their vastly different habitat requirements and greater sensitivity to aquatic pollution and pathogens."*

Response: Please refer to the FEIS MIS section of Chapter 3; we have included a statement that addresses why the list of MIS selected is appropriate for the LTBMU.

PC 8&240: The Forest Service should ensure viability of spotted owls in the Basin.

PC 207: The Forest Service should ensure the viability of species present on the LTBMU.

PC 219: The Forest Service should ensure the viability of CASPO, BBW and marten on the LTBMU.

PC 240: The Forest Service should ensure viability of species relying on late seral, closed canopy forest, including California spotted owl, American marten, northern goshawk and northern flying squirrel.

PC 244: The Forest Service should ensure viability of sensitive species affected by outdoor recreation.

PC 245: The Forest Service should ensure viability of Sierra Nevada yellow- legged frog.

PC 286: The Forest Service should use monitoring information to actually achieve species viability by adopting a viability standard.

PC 288: The Forest Service should add a forest-wide standard (not a guideline) requiring the Forest Service to maintain at least viable populations of all MIS on the LTBMU planning area.

PC 297: The Forest Service should provide adequate snags to ensure viability of California spotted owl.

PC 298: The Forest Service should include a standard that protects dense closed canopy forest habitat from logging to ensure viability of the California spotted owl.

"Most importantly, the new plan needs to include an enforceable forest-wide standard requiring the Forest Service to maintain viable populations of the native wildlife species that live in the LTMBU, such as the California spotted owl and the black-backed woodpecker." (PC 207)

"As discussed below, Alternative B proposes to expand recreation in the Basin, including the use of motorized vehicles and snowmobiles, and expansion of ski area development. This expansion has the potential to threaten the viability of species sensitive to recreational impacts, particularly noise, including but not limited to the bald eagle, osprey, peregrine falcon, Northern Goshawk and American marten (as discussed.)" (PC 244)

"The Sierra Nevada mountain yellow-legged frog is imperiled in Tahoe. However, the draft Plan does not contain any monitoring requirements to ensure that management activities will be effectively implemented and successful in ensuring continued viability of the remaining populations….Without monitoring to determine whether these measures are being effectively implemented, the LTBMU cannot ensure the future viability of this species." (PC 245)

"The DEIS (pp. 3-277 through 3-280) discusses selection of MIS and monitoring of MIS. Yet, without a clear, substantive forest-wide standard requiring that viable populations of MIS be maintained on the LTBMU planning area, MIS populations could be monitored, but not maintained, thus leading to extinction or extirpation from this forest …" (PC 286)

"The revised plan needs to include a standard requiring the Forest Service to maintain viable populations of the native wildlife and plant species that occur on the LTMBU, and that provides flexibility should previously unidentified species be found, should new threats arise, or should new science emerge." (PC 288)

"In our view, the non-existent standards and loose guidelines do not ensure that future logging will avoid rendering existing late seral habitat unsuitable for late seral, closed canopy species for the foreseeable future, thus leading to the loss of viable and well distributed late seral species populations in the Basin." (PC 8 (combined with 240))

"The standards and guidelines that relate to the California spotted-owl are not scientifically supportable and will not ensure that the viability of this species will be maintained…" PC 8 (combined with 240)

"…in order to ensure viability of martens, a standard should exist that maintains dense, late-seral forest and retains large snags, diverse tree structure, large downed woody material, and patches of decadent trees in marten habitat."(PC 8 (combined with 240))

"Consequently, a standard that protects dense closed canopy forest habitat from logging is necessary to ensure viability of the owl." (PC 298)

"Yet the Draft Plan does not provide for such snag protection in spotted owl habitat thus further undermining the species' viability." (PC 297)

"There is no analysis in the DEIS or Draft Plan that forms the basis for a rational conclusion that there exist sufficient standards and guidelines to ensure and maintain viable populations of species, including specifically the black-backed woodpecker, California spotted owl, and marten."(PC 219, viability comment only)

Response: The design of the Revised Forest Plan (LRMP) was created to maintain species viability where that is possible and it is based on the best available science at the time of writing. The LRMP's standard and guidelines (S&G) with associated desired condition, strategies, objectives, and limited operating periods (Appendix E – E.2.5) have been developed for maintaining viability but effects on viability cannot be determined at this programmatic scale since the plan does not authorize any activities that might actually cause adverse impacts to species or habitats (refer to Appendix O). Rather, any impacts to species (beneficial or otherwise) only come from site-specific activities and project-level decisions, of which the scope, location, and design are unclear at the time of the LRMP approval.

The specifications (i.e. desired conditions; S&Gs) in the LRMP have set the parameters on the scope of future project activities, and in no way require (or even encourage) projects to be designed to maximize outputs. The LRMP is not the sole constraint on project-level activities and project-level decisions can (and usually do) include additional design features to minimize adverse impacts to species.

It is understood that new science is likely to be developed between the time of writing the LRMP and the time when projects are implemented, which can lead not only to different project design features but also to LRMP amendments as necessary to maintain viability of the selected species. It is also understood that the LTBMU is much smaller in size than most Forest Service units and it does not (cannot) provide for viability within the planning unit area for many of the wide ranging native vertebrate species based on its small size and geographic location between the Great Basin of Nevada and the Sierra Nevada mountain range. However, the LTBMU does function and provide for conservation of species over time by providing for habitat to support species reproductive individuals and provide for connectivity to surrounding habitat that allows for greater interaction and reproductive function for wide ranging species.

Water Quality and Soil Erosion; Watershed Condition

PC 184: The Forest Service should expand the water quality analysis in the EIS.

Response: The LTBMU presented the results of numerous analyses related to water quality as described in the FEIS in Section 3.4.24. Analyses relevant to water quality include many metrics including water chemistry, soil quality, erosion modeling, and stream condition inventories. The results of these analyses are summarized in this section of the FEIS to describe the affected environment, as well as inform analysis of environmental consequences. Full reports containing the results of these analyses are available on the external LTBMU website, if they were completed in the past 10 years. Older reports can be obtained by request from the USFS, using the bibliography also posted on the external website publications page. Specific responses to EPA comments are included at the end of this Response to Comments following the Cumulative Environmental Consequences section.

PC 186: The Forest Service should discuss how urban facility management will affect TMDL.

Sample Comment: ***"****Although not described in the Forest Plan or its Draft EIS, LTBMU's urban facilities, including administrative and recreational structures, contribute to the Lake Tahoe TMDL urban stormwater source category load.….. In the Final EIS, EPA recommends that the Forest Service discuss how management of LTBMU's urban facilities will contribute to achievement of the Lake Tahoe TMDL urban stormwater source category wasteload allocations."*

Response: Strategies and objectives for management of these facilities are described in Section 2.2 of the Forest Plan for the "Built Environment". Implementation of BMPs as described in this section is consistent with, and addresses goals established in the Lake Tahoe TMDL for the US Forest Service.

PC 187: The Forest Service should include in the plan a requirement to meet TMDL 20-year load targets.

Response: Please see under Physical Resources Objectives, under Water Quality and Soil Quality strategies, and standards and guidelines under Water Quality in the Revised Forest Plan. It should be noted there are no specific load targets assigned in the Lake Tahoe TMDL implementation plan to a single land management agency.

PC 183: The Forest Service monitoring plan should provide more detailed information on TMDL load targets.

Response: The USFS is actively engaged in the TMDL monitoring and reporting, which is currently in progress, and is consistent with, but separate from the LTBMU Forest Plan We disagree that the USFS monitoring plan should provide more detailed information on the TMDL load targets. As described in the Lake Tahoe TMDL document approved by EPA, Lahontan Regional Water Quality Control Board, and Nevada Department of Environmental Protection, TMDL targets have been established for various loading categories, not for specific agencies. As described in the Lake Tahoe TMDL document, the TMDL regulatory agencies are working with upland source category land managers to determine the monitoring and reporting that will be required on an annual basis, beginning in 2013.

PC 114: The Forest Service should create a more effective BMP program and address current inadequacies of BMPEP.

Response: As presented in Section 3.4.24.2, of the FEIS, under Soil Erosion, we believe the USFS BMP program has actually been quite effective at the LTBMU. We disagree that the BMPEP program is inadequate, as the BMPEP program has proven to be effective at identifying BMP implementation and effectiveness deficiencies when they occur, and triggering an adaptive management response before resulting in significant harm to water quality. Annual BMPEP reports are posted on our external website. At the Regional level the USFS has used the results of the BMPEP program to update and improve BMP program guidance, as described in the recently completed Region 5 USFS, Water Quality Management Handbook, in December of 2011.

PC 185: The Forest Service should increase the BMP objective to 100% for effectiveness and implementation.

Response: An annual 100% implementation and effectiveness rating for BMPs (as evaluated through the USFS BMPEP) is unrealistic and unreasonable. In addition, a 100% standard is unnecessary to project the beneficial uses of water quality. A 'not implemented' and/or 'not effective' rating does not mean a discharge to water quality occurred and/or impacted beneficial uses. On the contrary, as documented in our annual reports, this has occurred rarely on the LTBMU. Typically a 'not implemented' or 'not effective' rating identifies a water quality threat, which is then resolved through adaptive management at that location. Annual BMPEP reports are posted on the LTBMU public website.

PC 117: The Forest Service should monitor harmful impacts to soil and water.

Response: Agreed. A variety of metrics are proposed in Appendix A.

PC 90: The Forest Service should complete an analysis of all future and ongoing stream restoration projects in the LTBMU that are connected to or flow through roadless areas and provide greater protection to these headwater areas.

Response: Please see section 3.4.24.3 of the FEIS for analysis of the currently planned (defined as in planning phase currently and/ or implementation has been funded and initiated) and future stream restoration program. Project level analysis will occur through the project specific NEPA process, and ongoing strategic planning of the LTBMU watershed improvement program.

PC 142: The Forest Service should use less intrusive techniques to restore stream channels.

Response: The design of stream channel restoration projects occurs through a comprehensive and systematic process of ecosystem assessment and environmental analysis that ensures the least intrusive and most successful restoration approach to restore ecosystem function. Each stream channel restoration project is considered individually, and multiple options are considered for each project. Please see Part 2.1 Ecological Sustainability strategies for Watershed Restoration in the Revised Forest Plan.

PC 112: The terms of the Regional Waiver (timber waiver) should be incorporated into the Forest Plan in order to meet the monitoring requirements of the 1982 Planning Rule (water quality).

Response: As stated in the Section for Relationship to Plans of other Agencies, the Forest Plan is consistent with Lahontan Basin Plan (and by inference any associated regulatory measures). It is not appropriate for the Forest Plan to incorporate Lahontan's specific regulatory measures, as these are the responsibility of Lahontan to define, enforce, and revise/update. The current Lahontan timber waiver will be updated in 2014. Forest Plan monitoring (Volume III, Appendix A) serves a different purpose than the Timber Waiver and was developed to meet the requirements of the Planning Rule.

PC 125: The Forest Service should determine whether wilderness designation improves the clarity of Lake Tahoe.

Response: Land use designation cannot be evaluated alone in regards to impacts to lake clarity, when not put into context with scale and effects of implementation of the strategies and objectives. Please see the Cumulative Watershed Effects of Alternatives discussion presented in Chapter 3 of the FEIS. The source of major lake clarity impacts are disclosed in the TMDL documentation, which is the best current evaluation available.

PC 126: The Forest Service should consider management effects on downstream water quality outside the Tahoe Basin.

Response: The only outlet for downstream impacts is the Lower Truckee River. The Desired Conditions, Strategies and Standards and Guidelines described in the Revised Forest Plan under Water Quality protect the water quality of the Lower Truckee from USFS management activities at the same level as in-basin waterbodies.

PC 127: The Forest Service should take actions to protect and improve Lake Tahoe's clarity including clear limits on over-snow logging and slash production in or near streams, minimize winter and summer motorized use.

Response: Numerous Desired Conditions, Strategies, Objectives, and Standards and Guidelines described in the Draft Plan under Water Quality and Forest Vegetation, Fire, and Fuels are designed to protect, and/or improve the water quality of tributaries and runoff draining to Lake Tahoe. The Revised Forest Plan also requires inclusion of additional project-specific buffers around water bodies and SEZs.

PC 128: The Forest Service should address water quality by including in the Plan clear and enforceable standards.

PC 131: The Forest Service should maintain strict water quality protections to limit erosion.

PC 136: The Forest Service should protect Lake Tahoe.

PC 141: The Forest Service should consider how its actions affect Lake Tahoe.

Sample Comments: *"Please consider the Lake (the reason there is a Lake Tahoe Basin!) The runoff from all the land in the Basin is affecting our Lake."*

"Because the Lake Tahoe Area is so urbanized, I feel you must be very strict in your management plan. The health of the forest will insure the health of Lake Tahoe and my water."

"The forest plan will cover most of the Lake's watershed, and thus Forest Service decisions could help or hurt the effort to keep Tahoe blue so policy needs to walk the fine line of impact on Recreation and the optimal forest health while achieving Lake Clarity."

Response: This comment is addressed in Section 3.1 Physical Resources Standards and Guidelines (of the Revised Forest Plan), and Section 1.2 Water Quality Desired Conditions (of the Revised Forest Plan). Water quality protection is achieved through a combination of Forest Plan direction and project specific Resource Protection Measures.

PC 146: The Forest Service should not extend protection of SEZs to non-SEZ areas.

Response: In some cases, buffers that extend beyond SEZ boundaries are needed to ensure adequate protection of SEZs and water quality.

PC 188: The Forest Service should divert the Upper Truckee into settling ponds to collect sediment and thus improve lake clarity.

Response: Specific design approaches and alternatives for restoring individual streams are addressed through project level NEPA analysis, not Forest Plan Strategies, Standards, and Guidelines.

PC 193: The Forest Service should analyze the impacts of roads and ORV trails on water quality.

Response: Strategies and Standards and Guidelines described in the Revised Forest Plan under Water Quality are designed protect water quality equally under all the alternatives, related to both permanent and temporary roads. The analysis of direct, indirect, and cumulative effects of roads and OHV trails, under all the alternatives is described in the FEIS under Section 3.4.24 under Water Quality and Soil Erosion and Section 3.5 under Cumulative Watershed Effects.

PC 348: The Forest Service should mitigate the effects of OSV use on natural resources and document the effectiveness of the mitigations used.

Response: The USFS is not aware there is any evidence of water quality impacts occurring in the Tahoe Basin tributaries that could be attributed to OSV use, such as evidence of excessive soil disturbance, detections of polycyclic aromatic hydrocarbons /semi-volatile compounds in Tahoe tributaries or lakes, or toxicity impacts on aquatic biota as measured through macro-invertebrate bioassessments. A Draft "Stream Condition Assessment of the Lake Tahoe Basin in 2009 and 2010 using the River Invertebrate Prediction and Classification System (RIVPACS)" report, conducted through a SNPLMA research agreement with Humboldt State University, indicates that overall the majority of Tahoe Basin streams are in good to excellent condition as it relates to macro-invertebrate health (O'Dowd and Stubblefield, in prep). Future analysis of these data could be performed to look at stream condition ratings that are downstream of high use OSV areas, to get even more specific understanding of macroinvertebrate community response to designated OSV areas. Therefore, we do not believe there is an effect that needs to be mitigated nor documented, based on the relatively small scale of OSV use that occurs within the LTBMU. It is very clear that the transition from two-stroke to four-stroke engines, results in less pollutant emissions. Four-stroke engines are currently required by LTBMU snowmobile permittees, which is where some of the highest concentration of OSV use occurs in the Basin. Designated areas for public OSV use are identified on a Snowmobile Area map in the Revised Forest Plan (number 18) and on the published LTBMU Snowmobile Guide map.

PC 191: The Forest Service should better define how it will create resiliency in watersheds.

Response: The strategies described under Watershed Restoration in the Revised Forest Plan describe how the Forest Service will create hydrologic and geomorphic resiliency in watersheds.

PC 192: The Forest Service should emphasize the role of natural processes in watershed health.

Response: Agreed; the Watershed strategies on page 47 of the Revised Forest Plan are designed to maintain and restore hydrologic and geomorphic processes within the natural range of variability.

PC 145: The Forest Service should protect watersheds and water quality.

Response: Water quality and watershed management remain high priorities in the Revised Plan. Numerous Desired Conditions, Strategies, Objectives, and Standards and Guidelines described in the Revised Forest Plan are designed to protect, maintain, and improve watershed health and water quality.

PC 414: The Forest Service should manage water quality on all lands, including urban lots.

Response: The Desired Conditions, Strategies, Objectives, and Standards and Guidelines described in the Draft Plan under Water Quality apply to all USFS lands, including urban lots.

Wilderness

PC 18: The Forest service should examine the direct effects, indirect effects, and cumulative impacts of placing the majority of IRAs and CIRAs in zones where development is allowed, and ensure that Wilderness eligibility is maintained.

Sample Comment: *"In our scoping comments we requested that the LRMP and EIS include a thorough examination of the direct effects, indirect effects and cumulative impacts of a proposal to place an IRA or other roadless area in a management zone that allows activities that could impair its wilderness character."*

Response: There is no development allowed in IRAs, which includes roads. CIRAs are not a management area and have no requirements to maintain wilderness eligibility. IRAs are managed to retain their roadless character which would also ensure that the wilderness character is maintained. The analysis in the FEIS has been updated to include effects to IRAs from the five alternatives considered in detail.

PC 16: The Forest Service should analyze the eligibility and suitability of Citizens Wilderness Inventory (CWI) lands for wilderness recommendation

Please see Section 2.5 in the FEIS – Alternatives Considered But Eliminated From Detailed Study.

Cumulative Environmental Consequences

PC 13: The Forest Service should improve the cumulative effects analysis by including more projects in the analysis

PC 173: The Forest Service should improve the analysis of cumulative impacts.

Sample Comment: *"The DEIS fails to adequately and accurately disclose and analyze the cumulative loss of snowmobile areas across the "Visitor Market Zone."*

"The 25,000 acres proposed for logging in the LTBMU"

"Lake Tahoe Basin Multi-Jurisdictional Fuels Reduction Strategy. This strategy has characterized 68,000 acres as needing treatment in the Lake Tahoe Multi-Jurisdictional Fuels Reduction Strategy of 2007 which is embedded in a 208,800 planning landscape (p. vi)."

"General statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided."

Response: The analysis of cumulative effects is included in Section 3.5 of the FEIS. As described in the opening paragraphs of this section, projects that are in the process of implementation and projects that have signed NEPA compliant decisions are listed in Appendix K and in the project record and accounted for in the effects analysis for each resource. The Lake Tahoe Basin Multi-Jurisdictional Fuels Reduction Strategy was included in the cumulative effects analysis for Forest Vegetation, Fire and Fuels with Section 3.5 of the FEIS.

The analysis of cumulative effects is provided in Section 3.5 of the FEIS. The cumulative effects of treating approximately 25,000 acres over the next 15-20 years are disclosed in Section 3.5.2 under the Forest Vegetation, Fire and Fuels heading. Cumulative effects from OSV use have been added to Section 3.5.2 under the Recreation heading.

PC 78: The Forest Service should provide more detailed info about past projects that affect current conditions.

Response: As stated in Section 3.5 of the FEIS, it is neither possible nor useful to describe the cumulative effects of all past projects. As noted by the Council for Environmental Quality (CEQ) in an interpretive memorandum issued on June 24, 2005 regarding analysis of past actions, and consistent with Forest Service NEPA Regulations (36 CFR 220.4(f)) (July 24, 2008), the effects of past actions can generally be captured by a description of the affected environment, which is detailed in each individual resource section.

PC 315: The Forest Service analysis should consider cumulative effects on access (incremental closures) for alternatives that propose wilderness.

Sample Comment: *"The DEIS fails to analyze and consider the cumulative loss of recreational opportunity across the Visitor Market Zone. Tens of thousands of acres of public recreational lands have been closed inch by inch without any subjective or objective consideration previously, or in the current project."*

Response: Under all alternatives analyzed, the cumulative effects analysis for recreation was limited to the Lake Tahoe Basin region. In Section 3.4.27 of the FEIS, Consequences Related to Wilderness, the effects of wilderness designations on access are discussed. Effects to recreation access would be greatest under Alternatives C and D due to recommendation of additional wilderness areas, which would result in the prohibition of mechanized and motorized uses in those areas. Alternative C recommends that the Dardanelles Inventoried Roadless areas be given wilderness status and Alternatives D recommends that the Freel Inventoried Roadless Area in addition to the Dardanelles be given wilderness status. Under all of the other alternatives

(including the preferred alternative) there would be no change in the amount or types of recreation access because no additional wilderness is proposed.

PC 474: The Forest Service should consider the cumulative impacts of displacing mechanized users to different areas, necessitating additional travel.

PC 373: The Forest Service should consider the cumulative air quality impacts of displacing OSV users to areas outside the Basin, necessitating additional travel.

Response: Cumulative effects are found in Section 3.5 of the FEIS. That section has been updated to include the cumulative effects of displacing mechanized and OSV users, necessitating additional travel.

Response to EPA Letter

We believe that many of the EPA's recommendations have been addressed in the revised Forest Plan. The following responses include many references to the Forest Plan that show how those recommendations have been addressed. Please note that the Forest Plan is a programmatic document and is essentially strategic in nature. The Plan provides guidance for project design and development, and lacks the specific resource protection measures found in project planning documents. Similarly, the analysis in the FEIS is programmatic in nature. It discloses the general effects of activities and uses but does not disclose site-specific effects because these are unknown.

Please clarify what roads and trails are in the ATM plan and identify the roads and trails that may be a part of fuels treatment projects.

Response: There is no single ATM for the LTBMU. ATM plans have been developed for specific areas of the basin as well as part of projects where access changes are needed to accomplish project goals. The road and trail system is described in the FEIS in Table 2-1 and in the Access and Travel Management Section of the FEIS (3.4.1).

As stated in Section 2.2 of the FEIS, no programmatic expansion of the road system is proposed in any alternative. However, if a need for a new road is identified in a project, the Forest Plan does not prohibit construction, but provides guidance on route location and resource protection measures to be included in the project.

All roads in the system are potentially available for all administrative uses including vegetation management. Trails are generally not used for vegetation management projects. In the rare cases where trails are used by vehicles for a specific project, they are returned to their original width and condition after the project.

Specific roads and trails used for vegetation management are described in the NEPA documents for individual projects. Specific future needs are unknown at this point. Where new roads are needed, they are nearly always temporary roads. An estimate of average temporary road construction is included FEIS Section 3.4.22-Soil Resource.

Please include projections for the miles of roads and trails that will be added as a result of Alternative B. If this is quantified somewhere else in the document, please reference it here. If these are linked to the objectives, please state the objectives more clearly here (p. 66 of the Forest Plan).

Response: As stated in Section 2.2 of the FEIS, no programmatic expansion of the road system is proposed in any alternative. However, if a need for a new road is identified in a project, the Forest Plan does not prohibit construction, but provides guidance on route location and resource protection measures to be included in the project.

The description of alternatives in Section 2.3 of the FEIS has been updated to include the projections of unauthorized biking, hiking and equestrian trails that could be adopted onto the system.

If any miles of roads or trails are added as a result of fuel reduction targets that are presented in this plan, please discuss how they will or will not be managed so as to contribute to meeting the 12% reduction in fine sediment loading for the Basin.

Response: Under all alternatives classified roads, temporary roads, and trails will be designed retrofitted and maintained to minimize erosion and sediment transport potential, in accordance with relevant state and federal law, regulation, and policy (as already described in the Water Quality Section (3.4.24.3) of the FEIS). We have added additional references in this section to recently updated/developed Regional and National BMP handbooks, although these are already identified in our strategies section of the Forest Plan. Trails would not be added in response to fuel reduction objectives.

Basin-wide the USFS has already implemented a large volume of road decommissioning and road BMP retrofits, which we believe has substantially contributed to achieving the upland TMDL goal (See FEIS Sections 3.4.24.2, Water Quality, Overview of the Affected Environment; and 3.4.1.1, Access and Travel Management, Background). Additional opportunities will continue to be implemented as identified through project level planning as described in section 3.4.24.3.

For clarification the actual TMDL target is not clearly described in your letter. The 15 year TMDL target is a 12% reduction in the 9% of fine sediment loading estimated to originate from all Forested uplands, not just NFS lands.

The Forest Plan revision should specify actions for aggressively treating LTBMU lands to ensure the forest upland sources, on a basin wide scale, reduce fine sediment pollutant loads by 12 percent within twenty years and ultimately by 20 percent overall.

Response: For clarification the actual 15 year TMDL target is a 12% reduction in the 9% of fine sediment loading estimated to originate from Forested uplands. The 60 year target is a 20% reduction of the 9% of fine sediment loading, which is equal to 1.8% total reduction in 60 years.

The revised Forest Plan includes many Strategies for water quality protection (Section 2.1, Physical Resources Program Strategy, Water Quality and Soil Quality) and an Objective (Section 2.1, Physical Resources Objectives) to implement actions towards achieving the load reduction targets for upland sources identified in the Lake Tahoe TMDL during the 15 year life of the Plan. This objective has been modified from the Draft you reviewed, and is restated below:

“Track and report all activities to reduce sources of sediment and nutrient loading from USFS lands, through the Tahoe Basin Upland TMDL tracking and reporting program.”

The revised Forest Plan also includes the following standard and guideline which when taken together will be used to prescribe project-specific resource protection measures:

“Design all Forest management activities to prevent violations of applicable water quality standards.”

“For waters designated as “Water Quality Limited” (Clean Water Act Section 303(d)), participate in the development of Total Maximum Daily Loads (TMDLs) and TMDL implementation Plans. Execute applicable elements of completed TMDL implementation Plans.”

The Forest Plan should include a requirement for the LTBMU to develop and implement a plan for achieving the 20-year pollutant load reduction targets. The plan should also include measures to reduce loads from discrete disturbances on the forested landscape (e.g. roads, ski runs, fuels management projects) as well as address pollutant loads from stream channel reaches managed by the LTBMU (see also first comment under "Monitoring" below).

Response: The following Forest Plan guideline requires implementation of existing TMDL Implementation Plans:

"For waters designated as "Water Quality Limited" (Clean Water Act Section 303(d)), participate in the development of Total Maximum Daily Loads (TMDLs) and TMDL implementation Plans. Execute applicable elements of completed TMDL implementation Plans."

In addition, all management activities and uses would be subject to the following:

"Design all Forest management activities to prevent violations of applicable water quality standards."

"Apply current version of the PSW Region Best Management Practices as described in Forest Service Handbook direction for Soil and Water Conservation, Water Quality Management, and Forest Service National Core BMP Technical Guide to all management activities.[Standard]"

The Final EIS should discuss how roads and landings associated with fuel reduction projects will be monitored and modeled to achieve TMDL targets.

Response: Modeling to estimate achievement of TMDL basin-wide targets can only be done by developers of the TMDL model. The USFS did not develop and does not have access to this model.

Forest Plan level monitoring is described in Appendix A. Roads and landings are monitored using the Best Management Practices Evaluation Program (BMPEP) protocols. BMPEP monitoring results demonstrate a 13% improvement in overall implementation and effectiveness over the life of the monitoring program (See FEIS Section 3.4.24.2, Water Quality, Overview of the Affected Environment).

Results of our fuels reduction monitoring efforts and modeling we conducted at the hillslope scale is described in FEIS Section 3.4.24.2, Overview of the Affected Environment, and the monitoring reports are all available on our website (http://www.fs.usda.gov/detail/ltbmu/maps-pubs/?cid=FSM9_046480). That information can be used by the State Regulatory agencies to attempt to quantify TMDL load reductions.

The final Forest Plan should include a requirement for LTBMU to develop a monitoring and modeling plan in order to, by the end of the planning period (20 yrs), comprehensively quantify TMDL loads from LTBMU lands (forested and urban) since 2004. See "Monitoring and Modeling of SEZ Restoration Projects" and "LTBMU Urban Facility Stormwater Loading" sections below for additional comments concerning comprehensive TMDL tracking and accounting.

Response: The Lake Tahoe TMDL has no requirement for managers to "quantify loads" from upland sources. Lahontan staff requested that the USFS take the lead, in coordination with other upland land managers, in developing a proposal (that would be consistent for all forest management agencies in the Basin) , for upland source area TMDL tracking and reporting. We are currently engaged and will continue to stay engaged in this process. The agreed upon outcome is that TMDL regulatory agencies (Lahontan and NDEP) will use select metrics within the Tahoe Regional Planning Agencies Environmental Improvement Program (EIP) performance measures tracking and reporting program to evaluate progress for upland and stream channel sources. The LTBMU has and will continue to provide data to the EIP performance measure tracking and reporting program. In addition, the LTBMU will provide key findings (and citations) developed through its internal monitoring programs, that provide useful information for evaluation of TMDL implementation. The LTBMU just provided this kind of input in May of 2013, in response to a request submitted by NDEP and Lahontan staff. Information regarding the upland tracking and reporting program has been added to the FEIS to clarify the situation.

The Final EIS should discuss the measures that may be necessary to reduce nutrient loading from forested non-urban areas.

Response: Sources of nutrients related to forested uplands are primarily tied to reducing erosion processes, which is addressed throughout the FEIS (see Section 3.4.24.3, Water Quality in particular) and in the Forest Plan, as described above.

The final paragraph of page 3-479 states that stream channel erosion represents 2% of the total baseline fine sediment load to Lake Tahoe presented in the TMDL; the correct value is 4% (TMDL Report, p. 7-3).

Response: The Lahontan Basin Plan TMDL amendment, Tahoe 5.18-2, cites 3%. This correction has been made.

EPA agrees with the statement that "Current TMDL targets [presumably of the Blackwood Creek bedded sediment TMDL] also need to be incorporated into the new Forest Plan," but seeks clarification on how this will be done (p. 3-480)

Response: We have actually removed this statement, and provided the following clarifying language relative to the Blackwood TMDL.

"All large scale opportunities for stream channel restoration actions have been completed in the Blackwood watershed, and LTBMU monitoring programs are in place to measure attainment of the Blackwood TMDL targets over time."

EPA recommends that project monitoring and analysis of ambient water quality data should have an additional objective incorporated into the Forest Plan for the estimation and quantification of TMDL loading for those projects.

Response: This is not required in the TMDL adopted by your agency. Water Quality data for stream channel restoration projects is a very expensive and unreliable indicator of project level effectiveness related to TMDL loading. This is the reason the Blackwood Creek TMDL was based on geomorphic metrics. The LTBMU has and will continue to perform project level effectiveness monitoring on stream channel restoration projects (see also Appendix A, Forest Plan Monitoring), based primarily on geomorphic metrics. The results of this monitoring will be provided to the TMDL regulatory agencies, along with metrics required as part of upland TMDL tracking and reporting program.

External information sources for soil erosion monitoring (such as that provided in Lahontan RWQCB Notices of Violation (NOVs)) should also be included

Response: Regulatory actions such as NOVs do not constitute monitoring, they only document when permit conditions were not met, regardless of actual threat to water quality. In our past experience, the NOVs we have received often inaccurately characterized actual conditions, which we have documented in written responses to those NOVs.

We include all validated and legitimate external sources of monitoring and research for consideration in our management decision making, for all resources (see Appendix A, Forest Plan Monitoring).

The Final EIS should provide further details concerning how monitoring will inform TMDL reporting and tracking.

Response: The Tahoe TMDL adopted by your agency provides little direction on this issue. Lahontan staff acknowledge that the Water Board has not determined how best to implement the tracking and reporting requirement. They have requested that the USFS take the lead, in coordination with other upland land managers, in developing a proposal (that would be consistent for all forest management agencies in the Basin) for the TMDL regulatory agencies to review and adopt if acceptable, for Upland TMDL tracking and reporting. We are currently and will continue to be engaged in this process. This information has been added to the FEIS to clarify the situation.

Our suggested addition to Sec. 3.4.21[sic].2 is to the discussion of Heavenly Valley Creek on p. 3-498. This discussion should refer to the Heavenly Valley Creek TMDL, and the status of implementation.

Response: The status of compliance with the Heavenly TMDL, as well as other Heavenly Creek water quality standards, is already described in this section (FEIS Section 3.4.24, Water Quality). It is provided here again for your convenience:

"Water quality data indicates significantly improved conditions within the Heavenly Ski Area, with the water quality well below the TMDL standard for Heavenly Creek. There are still persistent exceedances of standards for iron (which appears to be natural causes) as well as chloride at all three Heavenly creek WQ sites; however these were also exceeded at the

undisturbed reference site on Hidden Creek. State effluent standards for the California Lodge parking lot, Edgewood Creek, and below the Boulder parking lot are also typically exceeded. Heavenly has recently completed new BMPs at both these facilities, and is continuing to investigate and improve the performance of these BMPs."

Measures that will improve the rate of BMP implementation and effectiveness to 100% in both categories should be proposed and included in the Forest Plan.

Response: We do not believe a 100% effectiveness rating is realistic, nor is it necessary to protect water quality. The USFS BMPEP monitoring program process implemented on the LTBMU, and as described in our Regional and National handbooks, includes rapid management response to ineffective ratings to correct identified deficiencies, as well as an internal evaluation to ensure lessons learned are incorporated in project design and implementation to minimize future deficiencies. We did correct the current Forest target in the FEIS, which is to achieve 95% effectiveness ratings. We also updated this section to identify the BMPEP results in 2011 and 2012 which reported 95% and 94% effectiveness ratings, respectively.

The watershed condition assessments should be coordinated with implementation of the CRAM.

Response: The watershed assessment process is a national Forest Service protocol for assessing large scale watershed condition, as described in FEIS Section 3.4.26, Watershed. CRAM is a regional methodology for assessing the condition of riparian ecotypes. Any coordination of these two methodologies would need to occur at the Regional and National level.

The discussion of cumulative water quality and watershed condition effects should be updated to reflect the 2011 TRPA Threshold Evaluation that is now available (http://www.trpa.org/default.aspx?tabid=l 74), although the updated information may not materially affect the conclusions reached concerning threshold attainment (p. 3-529).

Response: The FEIS Section 3.5.2, cumulative effects, has been updated to include this information.

In the Final EIS, EPA recommends that the Forest Service discuss how management of LTBMU's urban facilities will contribute to achievement of the Lake Tahoe TMDL urban stormwater source category waste load allocations.

Response: The approach you describe above this recommendation is not required in the TMDL adopted by your agency, and has never been proposed to us by the Lahontan water board. The nature of many of these facilities, (i.e. campgrounds) are more upland than urban, because of the degree of forested buffer around them and lack of connectivity to urban stormwater drainages. Our management of these areas, in the context of reducing pollutant loads, includes continuing to implement BMP upgrades, as described in Section 2.2 of the FEIS. We will be tracking and reporting accomplishments as part of our Upland source area tracking and reporting program.

We recommend that the Forest Service implement BMPs and work with the interagency Smoke Management Group to reduce emissions from prescribed bums and wildfires to the greatest possible extent and incorporate this into specific objectives in the Forest Plan. If these are in the Forest Plan, then they should be described completely and accurately in the Air Quality section of the EIS.

Response: We do participate in interagency smoke management coordination. While we are not aware of a specific group for this purpose, we coordinate with many groups, including, but not restricted to CARB, adjacent Forests, private and state prescribed fire practitioners, air quality control districts, as well as the Regional Forest Service air quality staff. Air quality strategies are described on p45 of the Draft Forest Plan. Air quality is regulated by CARB, utilizing national EPA standards, and is enforced by the air quality control districts. We believe that adherence to current regulation is adequate to maintain air quality.

Our fuels reduction program is designed to reduce smoke emissions from wildfires by removing fuels that could otherwise be consumed in a wildfire.

Please clarify why prescribed burning emissions are between about twice to over four times that of wildfire emissions. Clarify the discrepancy between the tables and figures, and provide further information regarding the assumptions and data that are used to derive the conclusions.

Response: The difference in the amount of acres of prescribed burning and wildfires primarily accounts for the difference in emissions. We have clarified this discussion in the FEIS, Section 3.4.2.

Consider how mitigation measures for black carbon and greenhouse gases can be incorporated into the Forest Plan.

Response: Nationwide Forest Service policy for carbon and greenhouse gas management is still being developed. We will implement this policy when it is finalized and will amend the Forest Plan if needed. We have incorporated desired conditions that would allow us to implement these policies. Current policy includes the following, which are referenced in the Design Criteria section of the revised Forest Plan:

- Forest Service Strategic Framework for Responding to Climate Change. Version 1.0. 2008 National Roadmap for Responding to Climate Change FS-957b 2011
- Navigating the Climate Change Performance Scorecard. A Guide for National Forests and Grasslands (Version 2) 2011

If it is still occurring, the Forest Service should vigorously manage grazing, especially in riparian and wetland areas that are functioning at risk in a static or downward trend in order to facilitate their recovery. If necessary, please discuss and incorporate protection measures and management actions in the Final Forest Plan/EIS.

Response: We have no active grazing allotments at present. A range section has been added to the FEIS (Section 3.4.18).

Comments Received from Federal, State, Local Agencies, and Elected Officials

As required in Forest Service Handbook (FSH) 1909.15 (Sec 25.1), comments and views of the appropriate Federal, State and local agencies, which are authorized to develop and enforce environmental standards, are presented in their entirety in the following section; this also satisfies the requirement in NEPA Section 102 (c).

Official comments to the Draft EIS were received from the following agency offices:

- State of California Department of Fish and Game
- California Tahoe Conservancy
- Douglas County, NV
- El Dorado County, CA
- Lake Tahoe Basin Fire Chiefs
- State of Nevada Department of Conservation and Natural Resources, Division of State Lands
- State of Nevada Department of Wildlife
- Placer County, CA
- City of South Lake Tahoe – City Council
- Tahoe/Douglas Fire Protection District
- Tahoe/Douglas Visitors Authority
- Tahoe Regional Planning Agency
- Tahoe Tallac Association
- United States Department of the Interior, Office of the Secretary (Washington, DC.)
- United States Department of the Interior, Office of Environmental Policy and Compliance, Pacific Southwest Region (San Francisco, CA)
- United States Environmental Protection Agency, Region IX
- Washoe Tribe of Nevada and California

State of California -The Natural Resources Agency
DEPARTMENT OF FISH AND GAME
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95667
(916) 358-2900
http://www.dfg.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

August 29, 2012

Denise Downie
U.S. Forest Service - Lake Tahoe Basin Management Unit
35 College Drive
South Lake Tahoe, CA 96150

Subject: Comments on the Draft Environmental Impact Statement for the Draft Land Management Plan for the Lake Tahoe Basin Management Unit

Dear Ms. Downie:

The Department of Fish and Game (DFG) has reviewed the U.S. Forest Service's Draft Environmental Impact Statement (DEIS) for the revised Land and Resource Management Plan (Forest Plan) (project) for the Lake Tahoe Basin Management Unit (LTBMU). The revised document will provide an updated Forest Plan for the LTBMU that will guide management of National Forest System (NFS) lands in the Lake Tahoe Basin (LTB) for approximately the next 15 years. The proposal updates the management direction for 154,000 acres of NFS lands in California and Nevada by describing desired conditions, objectives, suitable uses, standards and guidelines and monitoring requirements. In accordance with the National Environmental Policy Act of 1969, the Forest Service has prepared a DEIS for the Draft Forest Plan.

The DFG is providing comments on the DEIS as trustee agency for the State's fish and wildlife resources. As trustee for the State's fish and wildlife resources, the DFG has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of such species. The DFG may also be a responsible agency for a project affecting biological resources where we will exercise our discretion (after the lead agency) to approve or carry out a proposed project or some facet thereof.

The LTB is one of the most challenging areas of the State to manage wildlife, principally black bears, due in part to the ever-increasing public recreational use in forest lands. We estimate the California black bear population has increased to over 30,000 bears statewide, and the LTBMU may have one of the highest bear densities in the State. There is a greater probability of human/bear interaction and this affects area homeowners, business owners, visitors, and individuals leasing forest service lands. The DFG requests that the Forest Plan include an analysis of the potential for negative human-bear interactions in the LTB.

All public agencies with jurisdiction in the LTB receive countless calls about bears breaking into homes, rummaging through trash, and scavenging for food at campgrounds. Often these unnatural behaviors are directly correlated to the misguided actions of humans. It is crucial for all agencies dealing with these complicated issues to make every effort to be consistent in management requirements and enforcement measures. Imposing mandatory use of food and garbage storage lockers in campgrounds, bear canisters in the backcountry, and placement of bear-resistant trash receptacles throughout the area will decrease the probability of bears and other wildlife becoming habituated to human food sources. Such strategies will help keep the public safe and bears alive and wild.

Conserving California's Wildlife Since 1870

The DFG recommends implementing a Forest Order in the LTBMU with language similar to that of other National Forest Plans in California. Inyo National Forest Order states: "Possessing or storing any food or refuse unless stored in a bear proof container or another manner designated to keep bears from gaining access to the food or refuse." By incorporating a Forest Order, the law enforcement officers can more definitively cite individuals that are using gross negligence in food storage while visiting or living within the Tahoe Basin.

The DFG has recently focused its "Bear Aware" public education campaign in Tahoe. We would like to partner with the Forest Service to continue that outreach and suggest including a similar educational message about bears in the Forest Plan interpretive efforts section. We are all stewards of our State's wildlife resources and this Forest Plan represents an ideal opportunity to demonstrate commitment to wildlife conservation in the Tahoe Basin.

If you have any questions regarding these comments please contact Shelly Blair, Associate Wildlife Biologist, at (530) 295-3510, Patrick Moeszinger, Environmental Scientist, at (916) 358-2850, or Jeff Drongesen, Environmental Program Manager, at (916) 358-2919.

Sincerely,

Tina Bartlett
Acting Regional Manager

ec: Tina Bartlett
Jeff Drongesen
Brian Naslund
Patrick Moeszinger
Shelly Blair
Mario Klip
Sara Holm
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STATE OF CALIFORNIA — THE NATURAL RESOURCES AGENCY JERRY BROWN, Governor

CALIFORNIA TAHOE CONSERVANCY
1061 3rd Street
South Lake Tahoe, CA 96150
(530) 542-5580

August 29, 2012

Email to: comments-pacificsouthwest-ltbmu@fs.fed.us
Draft Land Management Plan
Lake Tahoe Basin Management Unit
35 College Drive
South Lake Tahoe, CA 96150

RE: Draft Revised Land and Resources Management Plan and Environmental Impact Statement

Dear Colleague:

Thank you for the opportunity to comment on the U.S. Forest Service Lake Tahoe Basin Management Unit's (LTBMU's) Draft Revised Land and Resources Management Plan (Forest Plan) and its associated Environmental Impact Statement (EIS). The California Tahoe Conservancy (Conservancy) focused its review efforts on Forest Plan elements related to Conservancy program delivery and the analysis of Alternative B of the EIS. My staff and I appreciated LTBMU's webinar and clear documents, especially the graphics comparing the effects of the alternatives, as we conducted our review. Our comments are as follows:

1. LAND ACQUISITION AND ADJUSTMENT PROGRAM: The EIS recognizes that LTBMU land ownership adjustments, or transfers, with the Conservancy and Nevada State Lands are the preferred means of improving management efficiency in the Lake Tahoe Basin. The Conservancy supports land ownership adjustments as a high priority and encourages LTBMU to proceed with these activities. The Conservancy also suggests that LTBMU consider the documentation process for the Forest Plan as an opportunity for public input on land transfer activities. This approach may help to accelerate the implementation of the program. (NOTE: Page 70 of the Forest Plan describes LTBMU's continued acquisition of one-acre parcels, but the EIS describes them as two-acre parcels.)

2. RECREATION ENVIRONMENTAL ANALYSIS AND MANAGEMENT DIRECTION: The Conservancy appreciates that all alternatives in the EIS recognize the value of Dispersed Recreation access. However, neither the Forest Plan nor EIS discusses the value of nonmotorized watercraft activities or the importance of the Lake Tahoe Water Trail. Only "water play" at beaches is described as a beach recreation use, and motorized and non-motorized boating is discussed in the aquatic strategies section primarily as a source of contamination from invasive species.

   The nonmotorized watercraft community relies upon launch access from existing LTBMU developed beach sites and facilities as well as safe harbor and recreation destinations accessed from the water. Such nonmotorized water-based activities may affect management of these areas, including beach operational hours, concessions, overnight parking, and launch and storage areas.

The Conservancy recommends that LTBMU include nonmotorized watercraft activities and the Lake Tahoe Water Trail in the discussion of public access in the Forest Plan and EIS. By acknowledging the role LTBMU lands play in the viability of nonmotorized activities in the Forest Plan, the needs of this large user group can be better recognized in sustainable recreation system planning and investment.

3. SANTINI-BURTON ACQUIRED LANDS / URBAN FOREST PARCELS: The Management Area description and area Standards and Guidelines specifically describe dispersed recreation (e.g., trails) and erosion control improvements as allowed development types; however, Table 5 indicates that Dispersed Recreation Sites are prohibited uses in the Management Area. Other Environmental Improvement Program (EIP) project uses, including staging and access routes to support the construction of these projects, would benefit from being similarly called out as allowed on Santini-Burton urban lots. The Conservancy requests that LTBMU add these activities to the list of Desired Conditions, since these urban lots provide a critical base for the implementation of EIP projects.

4. SANTINI-BURTON ACQUIRED LANDS / URBAN FOREST PARCELS MANAGEMENT AREA: The Santini-Burton/Urban Forest Parcels Management Area appears to now extend beyond lands encompassed by the previous plan's Urban Lots Management Area. Under the 1988 Forest Plan, the Urban Lots Management Area had been governed by Management Prescription #12, which specifically states that it does not apply to LTBMU acquired land that could be "consolidated with other national forest land for management, such as those within Blackwood Canyon, and would not likely be transferred to local governments for management". Instead, it appears that all Santini-Burton acquisitions, including large parcels in the upper parts of the watershed, will fall under the restrictive management guidance of the new Santini-Burton/Urban Forest Parcels Management Area in the proposed Forest Plan. Please confirm that this is the case.

   Larger Santini-Burton acquired parcels may benefit from additional management flexibility beyond the proposed Management Area provisions. For example, uses for the Management Area prohibit managed wildfire; developed and dispersed recreation sites (including trailhead parking); motorized trails, over-snow and cross country travel; and certain non-recreation special uses (communication sites and transportation-related). Standard and Guideline 138 in particular could be troubling to implement. The Conservancy suggests management of these parcels on a case-by-case basis to support recreation and resource management projects and activities where feasible.

   The proposed Santini-Burton/Urban Forest Parcels Management Area includes a management subset entitled "Urban Forest Conservation Area". LTBMU may wish to consider establishing Suitable Uses and Management Activities for this subset separate from those for other special land acquisitions in Blackwood and Ward Canyons, Incline Lakes, Ski Beach, etc., to benefit LTBMU's long-term management in both of these types of areas.

5. MULTI-MODAL TRANSIT / PARKING CAPACITY: The Conservancy appreciates the proposed Forest Plan's emphasis on promoting the use of transit and bike path systems for access to the National Forest, where appropriate.

   As a management agency with similar parking issues, the Conservancy would appreciate clarification regarding adoption of unmanaged sites and roadside parking. Specifically, we request expanded discussion of the point that unmanaged roadside parking that is not converted to bona fide parking (through hard coverage and/or best management practices) would be eliminated, and how LTBMU would manage the resulting parking activities.

The Conservancy has developed ways that allow us to manage parking for highly-valued areas that might be helpful to the LTBMU. For example, at some of our facilities, we close restrooms and cease garbage service but keep the parking area open until snow blocks access to the site. Thus, people may access the site longer season and are not compelled to park outside of a locked gate as occurs in the Pope-Baldwin area and the Big Meadow Trailhead. If sanitation is a concern, off-season portable restrooms could be considered.

In areas where overnight parking is prohibited within the LTBMU gate during the high season, such as within developed beaches where people may launch nonmotorized watercraft for kayak camping at Emerald Bay Campground, people must park outside the gate while they are on the water. The Conservancy recommends that LTBMU consider policies such as limited overnight parking when site-specific proposals for eliminating roadway parking are assessed in order to accommodate specific user needs.

Thank you for the opportunity to review the Forest Plan and EIS.

Sincerely,

Patrick Wright
Executive Director

BOARD OF COMMISSIONERS
1594 Esmeralda Avenue, Minden, Nevada 89423

Steve Mokrohisky
COUNTY MANAGER
775-782-9821

COMMISSIONERS:
Lee Bonner, CHAIRMAN
Nancy McDermid, VICE-CHAIR
Michael A. Olson
Doug Johnson
Greg Lynn

August 29, 2012

DELIVERED VIA ELECTRONIC MAIL

Draft Land Management Plan
Lake Tahoe Basin Management Unit (LTBMU)
35 College Drive
South Lake Tahoe, CA 96150

RE: Draft Land Management Plan

Forest Supervisor Nancy Gibson:

Thank you for the opportunity to comment on the LTBMU's Draft Land Management Plan. As you know, the Lake Tahoe Basin is a recreation destination for many outdoor enthusiasts, and many residents of Lake Tahoe move to the area to enjoy the natural setting and outdoor recreation it provides. Destination tourists travel farther, stay longer, are more likely to utilize transportation systems, and spend more in the local economy. Economic needs assessments have indicated that public recreational amenities, access to the Lake Tahoe shoreline, and transportation systems are factors that would contribute to economic growth of the visitor economy. Current demands and existing uses demonstrate the need for expansion of recreation and transportation facilities to improve the quality of Lake Tahoe's outdoor destination recreation experience.

Recreation

Douglas County supports increased access and sustainable recreation along the shores of Lake Tahoe, with improved resort and service amenities. Outdated and deteriorating recreational development should be rebuilt and modernized. Structures should be replaced or reconstructed. To meet growing demand, the capacity of existing sites should be greater utilized and converted to year round use. New recreational service amenities should also be accommodated. Redevelopment of the built environment would improve public access and economic opportunity, but most importantly would result in significant environmental improvements, including Lake Tahoe water quality. Many of the LTBMU properties have direct access to Lake Tahoe, yet have implemented little or no BMPs and other environmental improvements that could positively impact Lake clarity.

Concessions

Douglas County strongly supports the LTBMU's partnership with concessionaires to improving the quality of services. Douglas County understands that the current trend of declining budgets makes it difficult for the LTBMU to maintain aging facilities, and that there is no funding for new construction. Public-private partnerships through concessions will enhance the visitor experience by

Mailing Address: P.O. Box 218, Minden, NV 89423

providing for the investment of private capital to maintain, modernize, improve and manage commercial and recreational services in the LTBMU. Similarly, Douglas County itself would like to explore various opportunities to partner with the LTBMU to enhance the beneficial use of the LTBMU's recreation sites.

Washoe Tribe of Nevada and California

The Washoe Tribe of Nevada and California is an important partner of Douglas County. As the original inhabitants, Lake Tahoe is central to the Washoe People. Accordingly, Douglas County supports reestablishing a Washoe presence at Lake Tahoe, and maintaining the Washoe culture, traditions, livelihood, and language.

Consolidation

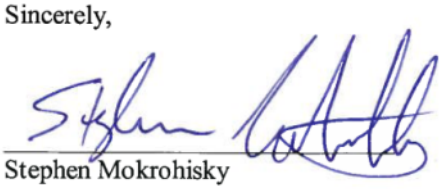
Douglas County has enthusiastically supported the acquisition of tens of thousands of acres of private lands by the United States Forest Service to protect the environment and enhance the recreational opportunities at Lake Tahoe. Some of these lands have been large, majestic, lakefront properties in our county, forever taking many tens of millions of dollars of private holdings off the property tax rolls. We understand that these acquisitions are important for the overall betterment of the many attributes that we all love at Lake Tahoe. In certain instances, however, the LTBMU's acquisition of urban subdivision lots has only served to increase the LTBMU's management obligations, and has significantly increased management costs.

To date, the LTBMU has acquired more than 3,500 urban subdivision lots. Adequate management of these urban subdivision lots is a top priority for the LTBMU. Douglas County supports greatly enhanced federal, state, local, and private partnerships to improve the environment, decrease erosion, reduce costs, and allow each agency to focus on activities that fit within its mission. To the extent possible, the LTBMU should continue to consolidate ownership of urban subdivision lots. Approximately 15 years ago, the Forest Service at Lake Tahoe deeded to Douglas County a handful of urban parcels. The time has come to reevaluate public land tenure in the Lake Tahoe Basin.

To ensure adequate management of urban subdivision lots, the LTBMU should: (1) consolidate with lands owned by the States of Nevada and California; (2) more frequently utilize the LTBMU's special authority under the Santini/Burton Act to transfer lands to local governments; and (3) expressly authorize consolidation with private landowners when there is a net public benefit. Consolidation in the above manner would improve management efficiency and recreational opportunities.

Again, thank you for providing the opportunity for the public to comment on the LTBMU Draft Land Management Plan. Douglas County appreciates the ongoing dialogue with the LTBMU on important issues that affect our local environment, economy and residents. We look forward to continuing to work with the LTBMU on these issues.

Sincerely,



Stephen Mokrohisky
County Manager

COUNTY OF EL DORADO

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TERRI DALY
Acting Clerk of the Board

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August 21, 2012

RECEIVED
AUG 27 2012

Nancy Gibson
Forest Supervisor
Lake Tahoe Basin Management Unit
35 College Drive
South Lake Tahoe, CA 95160

RE: Recommendations and Input on the Draft Lake Tahoe Basin Management Unit Plan

Dear Ms. Gibson:

The Board of Supervisors for the County of El Dorado has carefully considered factors affecting the county and its constituencies contained within the Draft Land Forest Management Plan (Forest Plan), including, reductions in recreational opportunities and catastrophic fire danger.

We understand that this forest plan may be used as a model for other forest areas and regard our comments as critically important input on behalf of the broad spectrum of user interests. We also regard the 1982 Planning Rule as a valuable reference as addressed by the Forest Range Land Renewable Resources Planning Act (1972) regardless if compliance is not required as stated in your draft forest plan.

The Board of Supervisors recommends combining aspects of alternatives B and C; and, does not support alternatives A and D.

Alternative B recommendations and agreements:

- Reduce the management areas from 21 to 4;
- Address safety concerns of communities by focusing on fuels treatments in Wildland Urban Interface areas;
- Expedite contracts for the sale of dead and dying trees after wildfire to generate revenue;
- Encourage better management of old growth condition through fuels treatments;
- Trees greater than 30" DBH may be removed under certain conditions described within the draft plan;
- Respond to major issue, management concerns and resource opportunities;
- Proactive approach to prevention of invasive species (ie. Quagga Mussel, etc.);
- Fuel treatments specifically intended to promote resilience to fire and insect outbreaks;
- Jeffrey Pine reduction in mid seral closed canopy stands to promote succession to late seral;
- Goals stated in option B of open access for OHV and OSV use is preferable.

August 21, 2012
Draft Land Forest Management Plan Input
Page 2

Alternative C recommendations and agreements:

- Reduction in stand densities;
- Wildland fire management for resource management would be allowed in all Fire Management Units;
- Overnight accommodation unit expansion (campsites and cabins);
- Any facility removed in a Stream Environment Zone would be replaced by facilities installed elsewhere;
- Encourage development of multi-modal transportation alternatives before consideration of expansion of day use parking (added parking fee structure is not desired);
- Future expansion of recreation infrastructure up to 15%;
- Enhancement of recreation access increasing vehicular access to forest areas while maintaining OHV and OSV use as designated in alternative B.

In addition, we would suggest including in the Forest Plan recognition of the Rubicon Trail based on the National Register of Historic Places Evaluation, done as part of the NEPA process completed pursuant to the recent granting of an easement signed on August 14, 2012, by the Eldorado National Forest.

We appreciate this opportunity to represent the public for this input period. We hope that you will pay serious and thoughtful consideration to our recommendations.

Sincerely,

John R. Knight, Chair
Board of Supervisors
County of El Dorado

RECEIVED
AUG 30 2012

August 30, 2012

Draft Land Management Plan
U.S. Forest Service - Lake Tahoe Basin Management Unit
35 College Drive
South Lake Tahoe, CA 96150

Re: Policy and Technical Comments
Draft Revised Land Management Plan (June 2012)
and Draft Environmental Impact Statement (DEIS)

Attention: Mr. Randy Moore, Regional Forester
Ms. Nancy Gibson, LTBMU Forest Supervisor
Mr. Jeff Marsolais, Deputy Forest Supervisor

Thank you for the opportunity to submit comments on the Draft Revised Land Management Plan and associated DEIS. We appreciate the significant amount of work involved in preparing such an important document. We understand that its purpose is to provide a policy and technical framework intended to guide planning, management, programs, and on-the-ground projects for the next 15 years, with an eye toward longer term desired conditions and to analyze the consequences of four plan alternatives.

The primary mission of our districts is to provide the highest level of life safety, fire prevention, suppression, rescue, and emergency medical services to the residents, property owners, and visitors we serve. We are proud to be 24/7 all risk service providers. **Consistent with our collective core values and mission, we have focused our comments and recommendations on the Forest Vegetation, Fuels and Fire Management sections of the DEIS and Plan.** We have divided our comments into two sections – Policy and Technical. We have identified concerns and recommended solutions to address our concerns.

Policy Perspectives
The manner in which the USDA Forest Service LTBMU manages the federally owned forest lands around Lake Tahoe impacts all fire agencies in the region. These include financial impacts. All agencies are grappling with constrained resources. Yet, there are land, fire and fuels management proposals within the four DEIS alternatives that, if implemented, could negatively impact lives and property and public safety. Our technical comments identify these impacts and concerns. In summary, we favor a modified Alternative C approach to fuels management and prioritization of actions in the Wildland Urban Interface (WUI), particularly within the defense zone. We strongly believe that fire behavior modification should be the primary objective to protect life safety and property for treatments in the WUI. We also believe that any action such as designating wilderness near communities that will increase fire suppression and structure protection costs must include a provision for the Forest Service to pay those costs. We believe fire and fuels management within the WUI is compatible with vegetation and habitat management, however, these must be secondary outcomes within the WUI.

The Lake Tahoe Basin Fire Chiefs support the responsible use of prescribed fire to maintain fuels reduction projects and to restore forest health. However we must caution the Forest Service against adopting any plan that causes the overreliance on prescribed fire. The analysis in the DEIS clearly shows that there are a limited number of burn days where prescribed fire can be used in the Tahoe Basin. Likely there are not enough burn days to maintain all of the fuels reduction projects that are being implemented in the 10-Year Strategy. Therefore plans should be developed to use a combination of prescribed fire and forest thinning to maintain these important projects. We also caution the Forest Service from using prescribed fire as silvicultural system in the WUI. We are unaware of any National Forest in the Sierra Nevada that is effectively using prescribed fire on the initial entry into a mixed conifer forest.

Thank you again for the opportunity to provide comments and make recommendations on the Draft Revised Land Management Plan and DEIS. We look forward to continuing our partnership with the USFS-LTBMU as we jointly work to protect lives, property, and public safety while collaborating to ensure a healthier, more resilient forest and ecosystem throughout the Tahoe Basin.

Sincerely,

Chief Benjamin P. Sharit
Tahoe Douglas Fire Protection District

Chief John B. Pang
Meeks Bay Fire Protection District

Chief Gareth S. Harris
Lake Valley Fire Protection District

Chief Michael D. Brown
North Lake Tahoe Fire Protection District

Chief Peter N. Poe
North Tahoe Fire Protection District

Chief Garry Gerren
Fallen Leaf Lake Fire Department

Technical
Volume I - Draft Environmental Impact Statement

Chapter 2, Alternatives, Page 2-3

Issue 1: On page 2-3, the DEIS makes the statement that *"Fire suppression practices would be the same for all alternatives."* This statement implies that the creation of additional acres of wilderness would not affect fire suppression tactics and practices.

Why this is an issue: This statement could cause people to believe that there would be no effect on the ability of emergency response crews to suppress wildfire even if an alternative includes additional wilderness designations. This is not accurate. Fire suppression in wilderness areas is typically limited to the use of hand tools and aircraft. Even chainsaws are usually forbidden or regulated. These constraints greatly limit the ability of LTBMU or other crews to conduct suppression actions in designated wilderness areas. In summary, wilderness designation absolutely limits the ability of suppression crews to engage a fire.

Solution: The DEIS should clearly describe that proposals to increase wilderness designation will have a significant effect on fire suppression tactics and fuels reduction and include an analysis of those effects. The DEIS must quantify the expected economic impacts to local fire agencies who are responsible for structure protection costs. The DEIS must also analyze the potential ramifications to communities near designated wilderness. The public must be clearly informed that wilderness will negatively affect fire suppression.

Issue 2: On page 2-4, the statement is made: *"Current designations of Inventoried Roadless Areas (IRA) would not be reduced or eliminated unless wilderness designation of an IRA, or portion of an IRA, is proposed and adopted by Congress."*

Why this is an issue: Currently, there are mapped IRAs in the Basin that are not roadless. IRA designation has a significant impact on the type and adequacy of fuels reduction treatments implemented in such areas. A Land Management Plan based on inaccurate IRA mapping will be flawed and will inappropriately constrain vital fuels treatments.

Solution: All Basin IRAs should be accurately inventoried and their boundaries adjusted based on surveys. Where an IRA and Wildland Urban Interface (WUI) overlap, effective fuels treatment must be the priority. IRA boundaries should be adjusted to the WUI boundary as it is unlikely that life safety will be the primary priority for vegetation management within an IRA. All fuels reduction and vegetation management projects within a WUI section of an IRA must include a design criteria of 4 foot flame lengths during the 90th percentile fire weather.

Chapter 3, Affected Environment and Environmental Consequences

Issue 3: Page 3-197, statement: *"Wildfire frequency, size, total annual burned area, and - in some forest types - fire severity, are all trending upward across the western U.S. It is believed that climate warming in conjunction with the increasing fuel loads are contributing to these trends (Miller et al. 2008, Flannigan et al, 2000)."*

Why this is an issue: The implication of this statement is that communities adjacent to USFS lands are increasingly at risk. However in the DEIS we do not see a consistent response to this increasing hazard.

Solution: The solution to this issue should be a set of overriding principles common to all alternatives. We recommend the following:

1) Each urban area and major roads are bounded by defense zones and threat zones. The defense zone is a minimum of 0.25 miles from communities and the threat zone extends 1.25 miles beyond the defense zone. All vegetation management and fuels reduction projects

within these zones must be designed to reduce the likelihood of catastrophic fire in the community and achieve specified design criteria for fuels reduction projects.

2) Fuels reduction and vegetation management projects within the defense zone must, at a minimum, be designed to reduce flame lengths to four feet under 90th percentile fire weather. This is consistent with fuels reduction analysis conducted for the *South Shore Fuel Reduction and Healthy Forest Restoration Project.* Other values such as recreation and wildlife can be used to influence treatments within the threat zone, however, the goal of designing projects to reduce the risk of catastrophic fire within the WUI should always be achieved.

3) Fuels reduction projects in the defense zone should be prioritized over projects in the threat zone. The Tahoe Basin Fire Chiefs recognize that the Forest Service must work in areas where NEPA is complete. However, in these areas work should proceed in the defense zone first. This prioritization recognizes that funding is uncertain and that protecting communities should be the first priority.

Issue 4: Page 3-200. The DEIS describes two "indicators" for Fire and Fuels. These are modification of wildfire behavior and reducing fire return interval departure (FRID). Under Indicator Descriptions (1), is the statement: *"Some treatments may not be designed with fire behavior modification as a primary objective but those included here are expected to have similar effects to a fuels treatment."*

Why this is an issue: Not all past vegetation management projects (even within the WUI), have adequately reduced forest fuels to reduce the risk of crown fire or flame lengths to acceptable levels. These inadequate treatments are particularly common on urban lots purchased under the Santini-Burton Act.

Solution: The Forest Plan must prescribe that all forest fuel reduction treatments and vegetation management projects within the WUI must have modification of wildland fire behavior as the primary objective. Fire and fuels management indicators in the WUI should be based on the National Wildfire Coordinating Group's Fireline Handbook, Appendix A, Fire Suppression Interpretations from Flame Length. Appendix A states that even at 4 to 8 foot flame lengths, fires are "too intense for direct attack on the head with hand tools. Hand lines cannot be relied upon to hold the fire. Bulldozers, engines, and retardant drops can be effective". The reduction of FRID should only be considered a tangential goal that will be achieved as a means of reducing wildland fire behavior and flame lengths below 4 feet during 90th percentile fire weather.

Issue 5: Page 3-201. Paragraph 2 on page 3-201 describes the second indicator for fire and fuels. The first line in paragraph 2 states that reducing FRID is a *"critical piece of forest restoration and fuels reduction strategy of the forest plans revision alternatives."*

Why this is an issue: The Basin Chiefs understand that reintroducing fire into the ecosystem has wide-ranging benefits. These include reducing surface fuels, thinning forests of weak and diseased trees, and increasing time between maintenance treatments. However, reducing FRID is not an indicator of the adequacy of fuels reduction projects and is not an end in itself within the WUI. As examples, the LTBMU has tried to implement projects with a prescription of hand thinning with lop and scatter followed by broadcast burning at Round Hill and east of the Skyland community. The hand thinning with lop and scatter was completed in 2009. However as of this writing, all of the slash and tree boles are still present at both project sites. These two areas were considered demonstrations of the efficacy of a prescription designed to reduce

FRID. However, both projects have proven that variable weather conditions along with implementation capacity constraints in the Tahoe Basin can prevent the guaranteed completion of these types of projects within a reasonable timeframe.

Solution: Reducing FRID is a valuable secondary goal for fuels reduction projects within the WUI. However, within the WUI, the Forest Plan should plainly prioritize the modification of wildfire behavior and flame length over reducing FRID. With this priority, the hand thinning on Round Mound and near Skyland would have been followed by pile burning. The piles would have likely have been burned when other nearby units were burned. These projects clearly demonstrate that prescriptions with the goal of reducing FRID cannot be predictably implemented in the Lake Tahoe Basin.

Issue 6: Page 3-203. Under the Overview of Affected Environment section, there is a discussion of the LTBMU's Comprehensive Evaluation Report 2006 (CER). It appears that this report is being used within the DEIS to provide direction for the Fire and Fuels section and updated Forest Plan. There are, however, several sections of the CER that are not acceptable to the Tahoe Basin Fire Chiefs. These are as follows:

- **DEIS statement:** Fire and fuels management needs to have more integration with vegetation and habitat management, and fire ecology.

- **Our comment:** Fire and fuels management within the WUI should prioritize life safety and property protection. Fire and fuels management is compatible with vegetation and habitat management, however, these are secondary outcomes within the WUI.

- **DEIS statement:** Focus should be on historic fire regimes, and forest vegetation and structure.

- **Our comment:** Focus within the WUI should be on modifying wildland fire behavior to protect lives and property. Ancillary benefits may include restoring forest composition or structure, but the WUI focus must be on the protection of life and property.

Why this is an issue: Our concern is that mixed goals may cause substandard treatments within the WUI. In our professional judgment, the initial treatments of many forest stands, particularly urban lots, are simply not adequate. The Fire Districts have repeatedly requested that treatment prescriptions be updated to include a goal of modifying fuels so that a wildland fire would have flame lengths of less than 4 feet under 90th percentile weather. Two examples of inadequate treatment immediately adjacent to communities are at Cave Rock and Kings Beach. Forest Service personnel have acknowledged that the treatments implemented would not likely reduce flame lengths to acceptable levels.

Solution: The Basin Chiefs recognize that fuels reduction projects can and frequently do restore forest structure and composition to historic reference conditions. However, in the WUI, which includes all urban lots managed the USFS-LTBMU, this must be a tangential benefit that is secondary to the goal of reducing flame length to protect life and property.

Issue 7: Page 3-206. The subhead at the top of this page asks *"Where are the potential problem areas for fire behavior?"* The paragraph below describes how Flammap was used to map potential fire behavior under 90th percentile weather. It goes on to state that *"Areas in red are a major concern since these areas may experience extreme fire behavior (active crown fire) threatening values at risk."*

Why this is an issue: The USFS fire behavior analysis fails to account for the presence of homes and structures adjacent to National Forest lands. Crown fire can of course have significant effects on forest resources, but even 4 to 8 foot flame lengths can defy direct suppression tactics.

Solution: The Forest Plan must acknowledge that communities are the primary value at-risk to wildfire on National Forest lands within the Tahoe Basin. Figure 3-33 (page 3-207) is a valuable tool for understanding potential fire behavior, however, this tool should not be used to prioritize treatments within the WUI or for assessing potential fire risk. All WUI communities are at-risk. Site-specific information should be used to design and prioritize treatments. Models can be useful, but cannot replace local knowledge and the experience of fire suppression personnel.

Issue 8: Page 3-214. This page contains a table (Figure 3-36) showing the *Average Number of Burn Days per Month.* The analysis for this table does not include snow depth nor does it include any consideration of red-flag days within a reasonable time period of the burn day.

Why this is an issue: Figure 3-36 shows there are very few burn days in the Tahoe Basin and that the months with the most burn days are also those with the deepest snowpack. There are almost no wildfires in the Basin during the mid-winter months when there are burn days. Therefore, it is highly unlikely that managed wildfire will ever be a significant tool for reducing forest fuels. Additionally, the Forest Plan should acknowledge that managed wildfire is generally used over multiple days. Figure 3-36 does not identify the number of adequate operational periods where the use of managed wildfire is plausible. Finally, the analysis does not include any consideration of red flag or near red flag conditions occurring near the designated burn day. This would suggest that managed wildfire would be used as one day event with the potential for red-flag condition occurring the very next day. It is highly unlikely that managed wildfire will be a valuable tool for forest treatments in the Tahoe Basin once snow pack and red-flag days are considered in the analysis.

Solution: The analysis for this table should be updated to include average snow depth. This information should then be used to inform the number of operational periods during which managed wildfire could be a tool. This table should also be recognized as a reason why managed wildfire is not a tool to reduce fuels in the WUI. Fuels reduction in the WUI must be scheduled based on need, not the vagaries of weather, snow pack, and the regulatory permission that must accompany managed wildfire use.

Issue 9: Page 3-218. Figure 3-40 incorrectly assumes that managed wildfire can be used as a tool during snow-free months with no consideration of the number of consecutive burn days that would be necessary to achieve the results shown in the table. Additionally, the analysis assumes that managed wildfire will be used in the WUI.

Why this is an issue: Figure 3-40 implies that managed wildfire could become an important tool to reducing forest fuels in the Lake Tahoe Basin. We view this as highly unlikely. As discussed above, there are very few days where fuel moistures and prescribed fire weather conditions would enable the use of managed wildfire in the WUI or even in the general forest of the Tahoe Basin. This improper reliance upon managed wildfire would result in the delay of important fuel reduction projects in the WUI. Projects in the WUI must be implemented when expected flame lengths exceed design criteria, not when all of the conditions coincide to allow the use of managed wildfire.

Solution: The Forest Plan should acknowledge that managed wildfire is not likely to be a reliable tool for reducing forest fuels in the WUI. Projects in the WUI must be implemented when predicted flame lengths exceed design criteria. Clearly stated, the Basin Chiefs do not support the use of managed wildfire in the WUI.

Issue 10: Page 3-219. Under the heading "Environmental Consequences" is the statement: *"Initial action on human-caused wildfire will continue to suppress the fire at the lowest cost with the fewest negative consequences with respect to firefighter and public safety."*

Why this is an issue: This statement does not distinguish between the WUI and the general forest. In the WUI, suppression should remain the goal and priority for human and naturally occurring wildfire. Managed wildfire in the WUI presents unacceptable risks.

Solution: The Forest Plan should directly acknowledge that it is unlikely that managed wildfire will ever be a tool within the WUI and that the initial action on all wildland fire within the WUI will be suppression.

Issue 11: Page 3-220. This page includes a list of indicators for WUI thinning and fuels reduction.

Why this is an issue: The Tahoe Basin Fire Chiefs are concerned that the Forest Plan does not clearly state that modification of fire behavior is always the primary objective for forest management in the WUI. We understand there may be secondary or tangential benefits. However, if the modification of fire behavior is not the primary goal, then the Forest Plan allows for the prioritization of other values above life safety and protection property. This is not acceptable.

Solution: The Forest Plan must clearly state that modification of fire behavior is the primary and superior goal for vegetation management within the WUI for the life of the Plan.

Issue 12: Table 3-29 on page 3-221 shows a comparison table of treatments under the different Plan alternatives (*Acre contributions to effects on indicators by the various vegetation and fuels treatments*). The table identifies target goals for the four alternatives.

Why this is an issue: Below, the Basin Chiefs use this table to provide comments and ask questions on Plan alternatives.

Solution - Comments/Suggestions: The Basin Chiefs are encouraged that the Forest Plan acknowledges the importance of completing the *Lake Tahoe Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Plan.* Updates to the current 10-Year Year Plan are contemplated in the process of updating Community Wildfire Protection Plans (CWPPs). The Forest Plan should clearly acknowledge that the current "10-Year" Strategy and Plan will be extended.

1. Within the WUI, fire behavior modification must be the primary goal of forest management.

2. Economics must be an important consideration as to whether a specified set of treatment types can be implemented. Hand thinning is generally more expensive than mechanical techniques. Question: Is it economically feasible to get the necessary treatments completed in the WUI with an increasing emphasis on more expensive treatment methods?

3. Table 3-29 appears to show that under the Modification of Fire Behavior indicator, certain treatments will prioritize certain outcomes. This table incorrectly shows that there is a basic incompatibility between (for example) "structure restoration" and "modification of fire behavior." Because of Table 3-29, it is unclear whether the LTBMU intends to prioritize forest stand resiliency over structure restoration on 15,000 acres under Alternative C. Clearly, this is a false choice. Structure restoration will generally lead to increased resiliency within the bounds of acceptable flame lengths. The Basin Chiefs recommend that Table 3-29 be removed entirely or that the underlying analysis clearly state that the "Activities" listed are sub-goals to the goal of modifying fire behavior.

4. Table 3-29 and the surrounding pages indicate that mechanical systems would be used on more acres in Alternative C than in the other alternatives and this leads to the increase in structure restoration, type conversion, and forest stand resiliency. Prescriptions for fuels reduction treatments should include targets for basal area, crown bulk density, surface fuel loading and crown base height. A silvicultural system should be chosen based on its suitability for the site and forest stand prescription goals. It appears throughout the DEIS that mechanical and hand thinning are competing silvicultural systems. **This is a false choice**. As the Forest Service's own studies have shown, mechanical systems can be superior to hand thinning and pile burning, even only considering environmental impact. In many cases, the forest prescription goals for thinning, structure restoration, type conversion and resiliency can be obtained in a single entry using mechanical systems where multiple entries must be made to achieve the same goals with hand thinning. Thus, there can be a reduction in environmental impact with mechanical thinning systems. Therefore, the Basin Chiefs recommend that the acreage goals shown in Table 3-29 be recalculated without an arbitrary distinction between treatment methods. We suggest that the LTBMU plan to use mechanical systems where they are appropriate and hand thinning where necessary. The DEIS should also analyze the total costs of maintaining fuels reduction treatments within the WUI where the durability of mechanical treatments results in lower overall maintenance costs.

5. In its fire and fuels section, the Forest Plan should not include any arbitrary diameter limits, however, given the constraints imposed on the Forest Service, we support Alternative C as the preferred approach for this topic. Currently in the Basin, there are areas of insect infestation, disease, and poor general forest health that would favor the retention of smaller trees over larger trees. If insect and disease mortality are expected to increase surface fuel loading rates beyond acceptable limits, then the best treatment may be to implement an over-story removal prescription. The Tahoe Basin Fire Chiefs believe that the professional foresters at the LTMBU should be given the latitude to prescribe the treatment that will best protect lives and property over the long term.

6. Table 3-29 [and the analysis under fire and fuels] does not include a section on fuels reduction project maintenance or costs. This is a fundamental flaw in the Forest Plan. Initial forest thinning projects in the WUI must be followed up with maintenance treatments in a predictable pattern based on expected flame length in the treatment unit. In general, maintenance should follow a combined Area/Volume Method of Forest Regulation. Tools such as Forest Vegetation Simulator are useful in informing a likely maintenance rotation. Slope, aspect, elevation, soil productivity and vegetation type will be the important variables that will influence the maintenance rotations. The result of an analysis of fire behavior is an initial entry schedule and maintenance schedule for each acre within the WUI. This schedule can then be used by the LTBMU to fund and maintain important fuels reduction projects designed to protect life and property. If in addition to protecting life and property, secondary

goals can be achieved, such as forest type conversion or structure restoration, then the prescription for forest stands should include provisions to obtain the secondary goals as well.

In general, the Basin Chiefs support Alternative C for Indicator 1, Modification of Fire Behavior. However, we are very concerned that the analysis underlying the Fires and Fuels section is incomplete because it presents false choices between treatment methods, includes wildland fire management in the WUI, does not include maintenance treatments, and does not include an analysis of the funding necessary to maintain fuels reduction projects within the WUI.

Issue 13: Page 3-221. This page presents goals for prescribed fire and managed wildfire that exceed any historical production by the LTBMU and may exceed or will likely exceed the capacity of the LTBMU to implement. Additionally, there is a proposal in Alternative B and C to use managed wildfire within the WUI during peak fire season.

Why this is an issue: The prescribed fire goals in the Forest Plan are counted toward the achievement of maintenance treatments within the WUI. To date, the LTBMU will not likely have the capacity to implement a burn program of the scale envisioned in the DEIS. In fact, the LTBMU has reduced its fuels crew personnel by 50 percent over the past several years. Further, the managed wildfire use section on page 3-221 includes the use of managed wildfire within the WUI during peak fire season. Opportunities to utilize managed wildfire in the WUI were grossly over-exaggerated in FSPro by including months with extensive snow pack and during peak fire season including red flag days. Further we are concerned that there is a great overreliance on the use of prescribed fire particularly in Alternative D for initial thinning of forest stands.

Solution: The Basin Chiefs support the LTBMU's development of a robust prescribed fire program that will be used to maintain fuels reduction projects within the WUI. The Forest Plan should include an analysis of available and necessary capacity to achieve the prescribed fire goals enumerated in the Forest Plan. We also encourage the LTBMU to evaluate using local fire crews to complete the prescribed fire projects on USFS lands based on the proven track record of local crews to achieve prescribed burning objectives.

As stated above, the Tahoe Basin Fire Chiefs cannot support a Forest Plan that calls for the use of managed wildfire within the WUI, particularly during peak fire season. We suggest this option be removed from the Plan entirely.

Issue 14: Page 3-223. The Analytical Conclusions section of the fire and fuels alternatives analysis includes statements that the Basin Chiefs fully support, such as *"Each fuels reduction project in the WUI will have fire behavior modification as the primary objective."* However, in our judgement, this statement is not adequately supported in the alternatives analysis.

Why this is an issue/Solution: We believe the following principles should apply to the Fire and Fuels section:

1. The WUI in the Lake Tahoe Basin is comprised of two zones, defense and threat, and those zones will remain throughout the life of the Plan.

2. Forest fuels reductions within the WUI should always have fire behavior modification as the primary goal and that should remain the goal for subsequent treatments for the life of the Plan.

3. The foresters at the LTBMU should not be limited on the prescription they can use based on constraints such as diameter limits or arbitrary limits on the use of mechanical systems.

4. Silvicultural systems should not be arbitrarily chosen. Within the WUI, the system that leads to the most cost effective and durable fuels reduction treatment that meets design criteria should always be chosen.

5. The Forest Plan should include an economic analysis that considers the costs of initial treatments and maintenance treatments within the WUI. This analysis alone will likely lead to the conclusion that mechanical systems are necessary to complete initial entries and maintain those treatments.

6. Managed wildfire is unlikely to ever become a safe and reliable tool for managing fuels in the WUI. This conclusion is based on the limited number of snow-free burn days and the number of red flag days when the forests are snow-free.

The Tahoe Basin Fire Chiefs support the use of prescribed fire to maintain fuels reduction projects in the WUI. Prescribed fire can then be used to reduce FRID. However, we must reject any alternative that includes the use of managed fire in the WUI simply to reduce FRID. Page 3-225 includes an analysis with the statement:

> *"Further, two to four consecutive day periods meeting these criteria occur very infrequently (average of less than twice per year in each of these three months) and longer consecutive periods are even rarer. Based on these constraints and all the inherent uncertainties, projecting acres using prescribed fire to reduce FRID is a difficult exercise."*

This basic analysis is correct, however, we believe the conclusion is incorrect. We recommend the statement be revised to read: *"Based on these constraints and all the inherent uncertainties, using managed wildfire to reduce FRID is unlikely. It is improbable that managed fire will ever be an important tool within the WUI."*

Issue 15. Page 3-229. The final conclusion paragraph to the Fire and Fuels section states: *"Overall, Alternative C provides the best strategy for achieving desired conditions. Although Alternative D would achieve the desired conditions if all conditions are optimal, the restrictions from using all tools when conditions are not optimal may tie the hands of managers during times when conditions are not suitable for the safe use of fire."*

Why this is an issue. This conclusion to the Fire and Fuels section underscores that the best strategy for achieving Fire and Fuels desired conditions was rejected by LTBMU in identifying Alternative B as the Unit's Preferred Alternative and Draft Plan. This conclusion with respect to Fire and Fuels is not acceptable.

Solution: We urge the Forest Service decision-makers involved in finalizing the Revised Forest Plan to take the following two steps: 1) Incorporate the guidance we recommended above (points 1 through 6); and 2) modify the Fire and Fuels section of Alternative C accordingly, and replace the Fire and Fuels section of Alternative B with the revised Fire and Fuels section currently in Alternative C.

Issue 16: Page 3-414. This page begins with a discussion of the impacts of hand and mechanical thinning to soils. The last paragraph on page 3-415 includes the statement:

"Alternative C might be the most favorable for the soil resource due to the longer recovery time between mechanized treatments; porosity losses that require long term recovery would be less frequent. Although surface disturbance would be slightly greater because more trees would be removed at one time, surface disturbances recover relatively quickly."

Why this is an issue: The above analysis is consistent with our experience with mechanical fuels reduction on state and private property. And yet, USFS-LTMBU selected the Fire and Fuels approach in Alternative B over Alternative C based on environmental impacts.

Solution: As stated above, the Forest Plan should include the best strategy for protecting lives and property within the WUI. The Forest Plan should not include present hand thinning and mechanical thinning systems as competing systems where there is no clear scientific basis for the distinction. If soil impacts cannot distinguish between hand and mechanical thinning, then the treatment method that achieves the best results should be chosen.

Issue 17: Page 3-510. This is the Analytical Conclusions section of the designation of new wilderness areas. This analysis ignores the impact of wilderness designation, or even wilderness study, on search and rescue, fuels reduction and fire suppression.

Why this is an issue. Local fire districts, in collaboration with county search and rescue teams, provide the majority of search and rescue resources in the Lake Tahoe Basin. This is an important part of our commitment to life safety. Wilderness designation has significant impacts on how search and rescue operations are conducted. In fact, any wilderness designation will cause local search and rescue teams to alter their current operational procedures. At a minimum, wilderness designation changes when helicopters, snowmobiles, or other mechanical resources may be used for search and rescue and how they are deployed. Any analysis of wilderness designation that does not include a section of the effects on search and rescue is inadequate and potentially misleading to the public.

Wilderness designation is also proposed, literally, within feet of communities, particularly in the Lake Valley Fire Protection District and the Tahoe Douglas Fire Protection District. However, the DEIS provides no analysis of the impact of wilderness designation on fire suppression or fuels management. At a minimum, the DEIS must include a section on the type of suppression actions that can take place in a designated wilderness, the types of suppression actions that are typically use in the region, and a quantification of the reduction in effectiveness between what is typically used and what may be used in wilderness. Without this analysis, the DEIS is incomplete and potentially misleading to the public.

Finally, there is no analysis of wilderness designation on the ability of the LTBMU to complete fuels reduction projects and maintain those projects within the WUI that may be designated as wilderness. The Fire and Fuels section of the DEIS must be updated to include an analysis that incorporates a quantification of the increase in fire hazard in wildfire in communities near newly designated wilderness areas. The public must be informed of the increased risk of catastrophic wildfire in, or coming out of, newly designated wilderness that is much closer to homes and Tahoe's urban environment.

The Basin Chiefs do not support the designation of any additional wilderness areas within the Lake Tahoe Basin. This is based on our first-hand knowledge of the complexities of search and rescue in a mountain environment, including IRAs and roadless areas. We are very concerned that there is a consideration of new wilderness areas where the Forest Service's own studies have identified an extreme risk of catastrophic wildfire. We are also very concerned that there is

a consideration of new wilderness with no analysis of the effects on search and rescue, fire suppression, and fuels management.

Solution: These inadequacies in the DEIS must be fully addressed if the document is to properly and legally guide the adoption of a Forest Plan Revision.

Issue 18: DEIS: Map 4. Map 4 is a map of the WUI that includes a defense zone that is generally a 0.25 mile buffer around communities, with a threat zone extending 1.25 miles beyond the defense zone.

Why this is an issue. The definition of the WUI has been revised in several national documents published by federal, state, and local fire entities. One common element among the differing definitions is the need to develop a WUI definition in consultation with all interested parties, including local governments and fire districts, state governments, and appropriate federal agencies. This process is not yet complete for the Lake Tahoe Basin. Map 4 has not been adopted by the Tahoe Basin Fire Chiefs. This is critically important because areas that might not meet the technical definition of a defense zone should in fact be included, based on the number of people present in the region during peak fire season. Just two examples of this are Emerald Bay and Van Sickle Bi-State Park.

Solution: Map 4 should be brought back to the Tahoe Basin Fire Chiefs for final review, boundary adjustments and final adoption. The final version of Map 4, with other review and approvals as appropriate, should be included in the final Forest Plan Revision.

Skip Canfield

From: Rebecca Palmer
Sent: Thursday, July 26, 2012 8:42 AM
To: Skip Canfield
Subject: RE: Nevada State Clearinghouse Notice E2012-245

The SHPO supports this document as written.

Rebecca Lynn Palmer
Deputy Historic Preservation Officer
901 South Stewart Street, Suite 5004
Carson City NV 89701
Phone (775) 684-3443
Fax (775) 684-3442

Please note, my email is rlpalmer@shpo.nv.gov

From: scanfield@lands.nv.gov [mailto:scanfield@lands.nv.gov]
Sent: Monday, June 04, 2012 8:59 AM
To: Alan Jenne; Alisanne Maffei; clytle@lincolnnv.com; brian.hunsaker@us.army.mil; cstevenson@ndow.org; Brad Hardenbrook; dmouat@dri.edu; Edward Foster; ed.rybold@navy.mil; Jennifer Crandell; James Morefield; Jennifer Newmark; Jennifer Scanland; kirk.bausman@us.army.mil; cohnl@nv.doe.gov; Mark Freese; McClain Peterson; mstewart@lcb.state.nv.us; deborah.macneill@nellis.af.mil; escomm2@citlink.net; Octavious.Hill@nellis.af.mil; Rebecca Palmer; Robert K. Martinez; Russ Land; Sandy Quilici; Sherry Rupert; Steven Siegel; sscholley@lcb.state.nv.us; Tod.oppenborn@nellis.af.mil; William.Cadwallader@nellis.af.mil; zip.upham@navy.mil; Alex Lanza; Dave Marlow; Michael Visher; Kevin J. Hill; dziegler@lcb.state.nv.us; Richard A. Wiggins; Robert Gregg; Shimi.Mathew@nellis.af.mil; Skip Canfield; whenderson@nvnaco.org; Tim Rubald; Alan Coyner; Lowell Price; Mike Dondero; Pete Anderson; Pete Konesky; Rich Harvey; djohnston@dps.state.nv.us; gderks@dps.state.nv.us; John Walker; tcompton@dot.state.nv.us; tmueller@dot.state.nv.us; Cliff Lawson; Karen Beckley
Subject: Nevada State Clearinghouse Notice E2012-245

NEVADA STATE CLEARINGHOUSE
Department of Conservation and Natural Resources, Division of State Lands
901 S. Stewart St., Ste. 5003, Carson City, Nevada 89701-5246
(775) 684-2723 Fax (775) 684-2721

TRANSMISSION DATE: 06/04/2012

U.S. Forest Service

Nevada State Clearinghouse Notice E2012-245

Project: Draft Revised Land and Resource Management Plan- Lake Tahoe Basin Management Unit

Follow the link below to find information concerning the above-mentioned project
for your review and comment.
E2012-245 -

http://www.fs.usda.gov/wps/portal/fsinternet/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gjAwhwtDDw9_AI8zPy

- **Please evaluate this project's effects on your agency's plans and programs and any other issues that you a**
- **Please reply directly from this e-mail and attach your comments.**
- **Please submit your comments no later than Friday August 3rd, 2012.**

Clearinghouse project archive

Questions? Skip Canfield, Program Manager, (775) 684-2723 or nevadaclearinghouse@lands.nv.gov

____No comment on this project ____Proposal supported as written
AGENCY COMMENTS:

Signature:

Date:

Requested By:

Distribution:
- Division of Emergency Management
Alan Coyner - Commission on Minerals
Alan Jenne - Department of Wildlife, Elko
Alex Lanza -
Alisanne Maffei - Department of Administration
CPT Brian Brian Hunsaker - Nevada National Guard
Cliff Lawson - Nevada Division of Environmental Protection
Cory Lytle - Lincoln County
Craig Stevenson - Department of Wildlife, Las Vegas
D. Bradford Hardenbrook - Department of Wildlife, Las Vegas
Dave Marlow -
Dave Ziegler - LCB
David Mouat - Desert Research Institute

Denesa Johnston - Fire Marshal
Ed Foster - Department of Agriculture
Ed Rybold - NAS Fallon
Gary Derks - Division of Emergency Management
J Crandell - Colorado River Commission
James D. Morefield - Natural Heritage Program
Jennifer Newmark -
Jennifer Scanland - Division of State Parks
John Walker - Nevada Division of Environmental Protection
Karen Beckley - State Health Division
Kevin Hill - Nevada State Energy Office
Kirk Bausman - Hawthorne Army Depot
Linda Cohn - National Nuclear Security Administration
Lowell Price - Commission on Minerals
Mark Freese - Department of Wildlife
McClain Peterson - Colorado River Commission
Michael J. Stewart - Legislative Counsel Bureau
Michael Visher - Division of Minerals
Mike Dondero - Division of Forestry
Ms. Deborah MacNeill - Nellis Air Force Base
Nancy Boland - Esmeralda County
Octavious Q. Hill - Nellis Air Force Base
Pete Anderson - Division of Forestry
Pete Konesky - State Energy Office
Rebecca Palmer - State Historic Preservation Office
Rich Harvey - Division of Forestry
Richard A. Wiggins - State energy office
Robert Gregg - NTRT
Robert Martinez - Division of Water Resources
Russ Land - Nevada Division of Environmental Protection
Sandy Quilici - Department of Conservation & Natural Resources
Sherry Rupert - Indian Commission
Shimi Mathew - Nellis AFB
Skip Canfield, AICP - Division of State Lands
Steve Siegel - Department of Wildlife, Director's Office
Susan Scholley - Legislative Counsel Bureau
Terri Compton - Department of Transportation
Tim Rubald - Conservation Districts
Timothy Mueller - Department of Transportation
Tod Oppenborn - Nellis Air Force Base
Wes Henderson - NACO
William Cadwallader - Nellis Air Force Base
Zip Upham - NAS Fallon

BRIAN SANDOVAL
Governor

STATE OF NEVADA
DEPARTMENT OF WILDLIFE
1100 Valley Road
Reno, Nevada 89512
(775) 688-1500 • Fax (775) 688-1595

KENNETH E. MAYER
Director
RICHARD L. HASKINS, II
Deputy Director
PATRICK O. CATES
Deputy Director

August 30, 2012

United States Forest Service, Pacific Southwest Region 5
Mr. Randy Moore, Regional Forester
1323 Club Drive
Vallejo, CA 94592

Re: Draft Revised Land and Resource Management Plan

Dear Mr. Moore,

Thank you for the opportunity for the Nevada Department of Wildlife (NDOW) to comment on the Draft Revised Land and Resource Management Plan. We would like to take this opportunity to share the following comments regarding the associated Environmental Impact Statement (EIS) draft. The comments provided below focus on the NDOW, Wildlife Action Plan (WAP), and the Species of Conservation Priority list.

COMMENTS

Draft Environmental Impact Statement (DEIS)

(ES-2 Executive Summary)
This section expresses the public stakeholder's options. The USFS opinion on each one of the topics should be included.

Alternative B (2.3.2)
Alternative B could significantly impact Mountain Beaver (*Aplodontia rufa californica*), a Species of Conservation Priority. This species is physiologically limited to moist microenvironments that need ample vegetation and ground cover. The development of trail systems, montane riparian enhancement and access into these habitats without surveying for *Aplodontia* first will cause irreversible damage to the already fragile wildlife communities.

The Species Refuge Areas (SRAs)
The plan lacks a focused direction for sensitive wildlife species management. The plan describes protection of critical habitat and treatments that will provide habitat, but does not state how to maintain the prey base, or provide adequate foraging range for sensitive wildlife species. The plan does not contain sufficient detail of the sensitive wildlife species on your list prior to this section.

The plan has no information on connecting critical sensitive wildlife species habitats that are fragmented or prey base population maintenance. By opening up canopy and decreasing ground

litter as this plan states, you are decreasing suitable habitat for the prey base and decreasing the potential usable habitat for many wildlife species. Mule deer are mentioned in Chapter 3, page 443 but only as a TRPA special interest species. There is no information on management directives focusing on maintaining or improving mule deer summer & winter habitat, corridors, fawning and shelter habitat. Mule deer corridors into and out of the Basin need to be inventoried and protected before adding recreational opportunities into the backcountry and determining potential forest health/fuels treatment prescriptions.

Recreational restrictions should be discussed within crucial habitats such as breeding bird habitat, raptor nests, mule deer fawning and corridors. Restrictions could be year round or seasonally, based on the situation and habitat value.

NDOW's Species of Conservation Priority need to be a consideration in the plan's management (see list below). Monitoring, mapping, protecting and expanding these wildlife habitats should be a top priority. Maintaining balanced trophic interactions is critical on the Nevada side of the Basin due to the small land mass Nevada has that supports our Species of Conservation Priority.

3.4.1.1 Methodology
The plan should address how access could affect wildlife and their habitats.

Assumptions
Number 6 needs defining. What is meant by …"sensitive areas …"(plant, wildlife, forested, recreational, WUI)?

3.4.4.3 Environmental Consequences
"General Forest"
The management suggested in this section would have a negative effect on many wildlife species that require later seral stages. Conversion from mid to early seral stage forest will decrease the prey base for American marten, goshawk and owls and mesocarnivores that compete within an unbalanced and fragmented trophic environment. This also has the potential to eliminate corridors for the sensitive wildlife species and decrease limited habitat for forest bats. The general forest prescriptions need to be based on wildlife that are occupying the treatment sites proposed for treatment.

General Comments

1. In the plan, sensitive status species information becomes confusing for the reader because it is difficult to tell which sensitive species group is being discussed.
2. Within Table 2.6.2, the forest vegetation program strategy does not have any connection to sensitive wildlife species. There are general prescriptions without a focused direction.
3. Not until Chapter 3, page 89 is detailed information about the sensitive wildlife species within the Tahoe Basin found. Following the first two chapters can be difficult without the important information on sensitive wildlife species that makes the reader more engaged. This information should be moved to the beginning of the plan to fill in an important information gap.
4. Vague and very general text in some areas made it difficult to find information that would aid in understanding the section being read at the time.

Thank you again for the opportunity to comment. Please contact David Catalano, Western Region Supervisor at 688-1014, for further information.

Sincerely,

Laura Richards

Laura B. Richards, Chief
Wildlife Diversity Division

Nevada Department of Wildlife - Species of Conservation Priority in the Lake Tahoe Basin:

MAMMALS

1. American marten
2. American pika
3. Merriam's shrew
4. Montane shrew
5. Mountain beaver
6. Mountain pocket gopher
7. Mule deer
8. Northern flying squirrel
9. Shadow (Allen's) chipmunk
10. Sierra Nevada snowshoe hare (*Tahoensis*)
11. Western jumping mouse

BIRDS

1. Bald eagle
2. Golden eagle
3. Northern goshawk
4. Peregrine falcon
5. Ferruginous hawk
6. California spotted owl
7. Flammulated owl
8. Short-eared owl
9. Lewi's woodpecker
10. White-headed woodpecker
11. Mountain quail
12. Sooty grouse
13. Rufous hummingbird
14. Sage sparrow
15. Brewer's sparrow
16. Willow flycatcher mountain

REPTILES

1. Rubber boa
2. Sierra alligator lizard
3. Sonoran mountain kingsnake

COUNTY OF PLACER
Community Development Resource Agency

ENGINEERING & SURVEYING

MEMORANDUM

DATE: AUGUST 27, 2012

TO: MAYWAN KRACH, ECS

FROM: REBECCA TABER

SUBJECT: LTBMU DRAFT LAND MANAGEMENT PLAN (FOREST PLAN) DEIS

This Draft Environmental Impact Statement (DEIS) and Draft Land Management Plan (Forest Plan) for the Lake Tahoe Basin Management Unit (LTBMU) has been prepared by the US Forest Service and circulated for input on the preferred alternative and other alternatives.

The Environmental Impact Statement is programmatic in nature and discusses only the general types of effects that may occur during plan implementation. The environmental effects of specific actions or activities are not discussed. Future project-specific environmental analysis will disclose the specific effects of each project or activity and the ESD may have comments on these future specific projects.

Thank you for the opportunity to review and comment on the DEIS and Forest Management Plan. We only have the following comment:

1. Grading Plans, if applicable, will need to be reviewed and approved by the County prior to commencement of any grading activities within Placer County that are subject to Article 15.48, Placer County Grading, Erosion, and Sediment Control Ordinance. The requirement for submittal of Grading Plans to Placer County, if applicable, should be included in the Required Permits and Approvals section of the EIS.

cc: Richard Moorehead, DPW Transportation

City of South Lake Tahoe

"making a positive difference now"

City Council Member Bruce Grego

August 30, 2012

Nancy Gibson
Forest Supervisor
Lake Tahoe Basin Management Unit
35 College Drive
South Lake Tahoe, CA 96150
Via email(comments-pacificsouthwest-ltbmu@fs.fed.us)

Re: Draft Land Management Plan

Dear Ms. Gibson:

As a member of the City of South Lake Tahoe City Council, I have the following comments on the Draft Land Forest Management Plan being proposed by your agency.

In reviewing the Draft Plan, it would appear that the combination of Alternatives B and C would be in the public's best interest. More specifically, reducing management areas from 21 to 4; the focusing of Fuel Treatment and Wildland Urban Interface areas; accelerating the removal of dead and dying trees; a pro-active approach to invasive species; and, the goals stated in Option B of open access of off highway vehicle use is clearly preferable.

Similarly, Alternative C proposes the reduction of stand densities; permitting Wildland Fire Management; permitting overnight camping and campsites; the encouragement of multi-modal transportation alternatives; the expansion of day use parking; and, the future expansion of recreation infrastructure up to 15% together with the enhancement of recreational access are also elements of Alternative C that I would favor.

I do not support Alternatives A & D. Regardless of the ultimate disposition of this issue, the continued use of over snow vehicles and off highway vehicles should continue to be allowed in the forested areas addressed by your plan.

I also wish to emphasize that I am concerned that any designation of wilderness areas as proposed by your other alternatives, could prevent effective fire fighting in those areas.

City Administrative Center · 1901 Airport Road · South Lake Tahoe, California 96150-7048 · bgrego@cityofslt.us · (530) 544-7575 · (530) 544-7587 FAX

Thank you for the opportunity to provide input on these very important issues. Please note, I am writing this letter as a member of the City Council and it is not a letter from the entire City Council.

Sincerely yours,

Bruce Grego,
City Council Member of the
City of South Lake Tahoe

TAHOE DOUGLAS FIRE PROTECTION DISTRICT

Ben Sharit, Fire Chief
Mark Novak, Assistant Chief

Steve Seibel, Chairman
Ann Grant, Vice Chairman
Brad Dorton, Trustee
Kevin Kjer, Trustee
Mike Bradford, Trustee

August 29, 2012

Dear Supervisor Gibson:

The Draft Forest Plan and accompanying Draft Environmental Impact Statement (DEIS) for the Lake Tahoe Basin Management Unit provide for the continued recognition of the Lincoln Inventoried Roadless Area (IRA). The DEIS also proposes to continue the current approach to fuels management within the Lincoln IRA. The proximity of the Lincoln IRA to communities in the Tahoe Douglas Fire Protection District (Fire District) and the limited treatment of forest fuels in IRA's gravely concerns the Tahoe Douglas Fire Protection District. Page 3-227 of the DEIS states includes the sentence "we do not conduct much fuel management in roadless or wilderness areas". All of the communities surrounding the Lincoln IRA have been rated as being at "high" or "extreme" risk from catastrophic fire in the Community Wildfire Protection Plans for the Fire District.

The Round Hill Project which was implemented during 2009, left many areas immediately adjacent to the communities of the East Shore untreated due to their designation as part of the Lincoln IRA. This approach will exacerbate the already hazardous conditions which exist within this area. Most areas within the Lincoln IRA are overstocked and are characterized by conditions that will be resistant to suppression efforts and highly susceptible to crown fire. The past century of fire suppression coupled with lack of hazardous forest fuels management within this area will undoubtedly make fires more resistant to suppression efforts and allow them to threaten the lives and property of the citizens of Lake Tahoe.

The Tahoe Douglas Fire District requests that the LTBMU consult with the Fire District to develop treatment protocols for this area that will modify expected fire behavior in a manner that will protect the lives and property of the citizens of our community. Should the LTBMU pursue a reckless and dangerous hands-off approach to fuels management in the Lincoln IRA, the Tahoe Douglas Fire Protection District cannot and will not bear the suppression or structure protection costs of wildfires that originate within the Lincoln IRA. We strongly urge the LTBMU to make provisions within the EIS and the Forest Plan that allow for the necessary fuels management of the sections of the Lincoln IRA that are within the WUI.

Sincerely,

Ben Sharit

Ben Sharit, Fire Chief

P.O. Box 919 - 193 Elks Point Road - Zephyr Cove, Nevada 89448

Phone (775) 588-3591 Fax (775) 588-3046

Tahoe Douglas
Visitors Authority

August 29, 2012

Mr. Randy Moore, Regional Forester
Draft Land Management Plan
LTBMU
35 College Drive
South Lake Tahoe, CA 96150

Re: Comments on the Draft Revised Land and Resources Management Plan

Mr. Moore,

Thank you for the opportunity to offer our comments regarding the Lake Tahoe Land and Resource Management Plan.

The Tahoe Douglas Visitor Authority (TDVA) is responsible for the promotion of tourism in our region based on funding received from the collection of room taxes. The TDVA believes the future of the economy in our area is founded on the outdoor recreational activities available in our magnificent natural environment, complemented by amenities provided by tourist and commercial businesses locally. The TDVA supports the Forest Service's direction as described in the preferred alternative (Alternative B) as striking a balance between these interests and encourages the Forest Service to add additional emphasis and flexibility to the recreation opportunities on public lands.

Recreation is one of the pillars of the region's economy and its sustainability is recognized as a key driver in the goals of the Lake Tahoe Prosperity Plan as well as the Tahoe Regional Planning Agency (TRPA) Regional Plan Update. The TDVA believes that the enhancement of year-round, world-class outdoor recreation opportunities in the region should be explicitly called out in the document as a goal.

The TDVA supports the inclusion of provisions allowing for a 15% expansion in existing special use permit areas (described in Alternative C) as well as the removal of Maintenance Management prescriptions for lands within existing special use permit boundaries (described in Alternative B & C) in the final plan. These changes will provide additional flexibility to consider sustainable recreation opportunity enhancements in the region.

Thank you again for the opportunity to comment on this important process and plan.

Respectfully,

John Packer
Chairman

169 Highway 50, Stateline, NV 89449 • PO Box 6777, Stateline, NV 89449 • Phone (775) 588-5900

TAHOE REGIONAL PLANNING AGENCY

Mail
PO Box 5310
Stateline, NV 89449-5310

Location
128 Market Street
Stateline, NV 89449

Contact
Phone: 775-588-4547
Fax: 775-588-4527
www.trpa.org

August 30, 2012

Nancy Gibson
Draft Land Management Plan
LTBMU
35 College Drive
South Lake Tahoe, CA 96150

COMMENTS FOR THE DRAFT LAND MANAGEMENT PLAN and EIS

Thank you for the opportunity to provide comments to the Draft Land Management Plan and associated EIS. The proposed Draft Land Management Plan provides a good range of alternatives and the updated Forest Plan illustrates the use of adaptive management principles from the past 20 years of managing lands in the Tahoe Basin. After reviewing the Draft Land Management Plan and the four alternatives, TRPA's agrees that Alternative B (proposed action) provides a direction that is beneficial to the Lake Tahoe environment.

LTBMU staff has produced a well thought out range of alternatives for the Draft Land Management Plan and their hard work is appreciated. However, as with any document of this magnitude there are some minor items, such as mechanized equipment operating on slopes greater than 30% and group selections up to 9 acres, which currently exceed what is allowed under TRPA Code and the Lake Tahoe Basin 208 Water Quality Plan. Since these "guidelines" are new directions for the LTBMU and there is science suggesting the feasibility of these activities, we look forward to engaging in future discussions on these, and other topics.

Thank you for taking our comments into consideration. If you or your staff has any questions, please do not hesitate to contact me at 775-588-4547 ext. 268. We look forward to working with the LTBMU in ensure a smooth transition to the updated LTBMU Forest Plan and TRPA Regional Plan. Once the new plans are both in place, the TRPA would like the opportunity to discuss updating the existing memorandum of understating between the TRPA and LTBMU to ensure consistency and efficiency as the new plans are implemented.

Best regards,

Mike Vollmer
Principal Planner
Forest Management Program Manager

imagine. plan. achieve.

TAHOE TALLAC ASSOCIATION
ARTS & CULTURAL EVENTS
P.O. Box 19273 ◆ South Lake Tahoe CA 96151 ◆ Phone (530) 541-4975 ◆ Fax (530) 541-4521
www.valhallatahoe.com ◆ E-mail info@valhallatahoe.com

August 30, 2012

U.S. Forest Service
Lake Tahoe Basin Management Unit
35 College Dr.
South Lake Tahoe, CA 96150

RE: Draft Land Management Plan

Dear Matt Dickinson and Denise Downie,

Thank you for the opportunity to review the Draft Revised Land and Resource Management Plan – June 2012. As board members of the Tahoe Tallac Association, we wanted to give our support to the continued management of the Tallac Historic Site as described in existing plans and documents. Through the efforts of the Tallac Association and the U.S. Forest Service, the site has been recognized as a historic center that has enhanced and restored a significant heritage area in the Tahoe region. We are also enabling the public to learn about, as well as enjoy, many rich diverse cultural experiences. The Association annually sponsors the Valhalla Arts & Music Festival, which features events that reflect the art and music of many cultures and historic time frames while enriching the lives of those who attend.

As members of the board we are supportive of Forest Plan alternatives, standards and guidelines that allow this relationship to continue as well as to respond appropriately to changing recreation and cultural/interpretative demands.

The alternatives discuss parking issues and support of removing shoulder parking, the provision and reduction of parking areas, and the support of transit. It is understood that the Tallac Historic Site is located in an area with considerable parking issues and congestion issues during the peak summer period. The variety and type of events which occur at the site range from weddings, music, theater, art, Washoe festival, and community celebrations. Due to the varying nature of the events and the need for event parking that is not impacted by other day users, the Tallac Association requests that any current and future parking and transit management plans be discussed and developed in consideration with the Association so that the site's specific needs are not negatively impacted as a result of parking changes. We appreciate having been included in projects to date and hope that the relationship and dialogue can continue in the future. On-site parking is a critical issue for the Association and we want to ensure that the Forest Plan allows for us to meet those needs appropriately.

Tahoe Tallac Association, a 501c3 non profit organization, operates under a special use permit with USFSDA on the Tallac Historic Site, Highway 89.
This facility is operated in accordance with USFSDA policy which prohibits discrimination on the basis of race, color, sex, age, handicap, religion or national origin.

TAHOE TALLAC ASSOCIATION
ARTS & CULTURAL EVENTS
P.O. Box 19273 ◆ South Lake Tahoe CA 96151 ◆ Phone (530) 541-4975 ◆ Fax (530) 541-4521
www.valhallatahoe.com ◆ E-mail info@valhallatahoe.com

Lastly, we would like to make the suggestion that the language of the lighting guideline be modified to note that path, parking, and road lighting at facilities with evening events be included. Patrons of the Tallac site often must walk a fair distance in the dark without any lighting. The event venues and parking can be separated by a significant distance due to the limited parking availability. As the guideline currently reads, lighting is discussed for administrative and recreation buildings, landscape structures and signs. We request that event/concessionaire venues be added to the list or other language as appropriate to ensure lighting could be included at some time in the future at the Tallac site. We support the concept that the lighting would protect the dark night sky and be motion activated. But it is also needed at the Tallac site for safety and security.

Sincerely,

Tahoe Tallac Association Board Members
Kathi Daley
Norm Glenn
Stephanie Grigsby
Dave Hamilton
Kerry Hawk
Brenda Knox
Ginger Nicolay-Davis
Bruce Rettig
Frank Riley
Brandi Schlagel
Bob Sweatt
Jenny Sweat
Pam Taylor

Tahoe Tallac Association, a 501c3 non profit organization, operates under a special use permit with USFSDA on the Tallac Historic Site, Highway 89.
This facility is operated in accordance with USFSDA policy which prohibits discrimination on the basis of race, color, sex, age, handicap, religion or national origin.

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
1849 C Street, NW - MS 2462 - MIB
Washington, D.C. 20240

TAKE PRIDE IN AMERICA

9043.1
PEP/NRM
June 1, 2012

ELECTRONIC MEMORANDUM

To: Assistant Secretary, Indian Affairs
Director, Fish and Wildlife Service
Director, National Park Service
Director, Geological Survey
Director, Bureau of Land Management
Commissioner, Bureau of Reclamation

From: Team Leader, Natural Resources Management
Office of Environmental Policy and Compliance

Subject: Draft Environmental Impact Statement (DEIS), US Forest Service (USFS), Lake Tahoe Basin Management Unit (LTBMU), Land and Resource Management Plan, Updated Forest Plan, Implementation, Alpine, El Dorado, Placer Counties, CA and Douglas and Washoe Counties, NV
(ER12-0398) (Comment Period Ends: **08/29/2012**)

This DEIS analyzes the consequences of four alternatives for revising the 1988 LTBMU Land and Resource Management Plan (as amended), commonly referred to as the Forest Plan. Plan revision provides an updated Forest Plan for the LTBMU that would guide management of lands in the Lake Tahoe Basin for approximately the next 15 years. The Friday June 1, 2012 EPA *Federal Register* Notice may be accessed at **http://www.gpo.gov/fdsys/pkg/FR-2012-06-01/pdf/2012-13356.pdf.**

There is no record that DOI reviewed/commented on the NOI, which was originally published March 19, 2010. The DEIS documents are available at http://www.fs.usda.gov/detail/ltbmu/landmanagement/projects/?cid=fsm9_046482.

Please have your appropriate field-level office review the DEIS from its particular jurisdiction or special expertise and provide its comments or indicate "no comment" to the Regional Environmental Officer (REO) San Francisco, CA **by August 15, 2012.**

/s/ 06/01/12

Dave Sire

cc: REO/San Francisco

OEPC-Staff Contact: Lisa Chetnik Treichel, (202) 208-7116; Lisa Treichel@ios.doi.gov

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Pacific Southwest Region
333 Bush Street, Suite 515
San Francisco, CA 94104

IN REPLY REFER TO:
ER# 12/0398

Electronically Filed

29 August 2012

Randy Moore
Regional Forester
Pacific Southwest Region
1323 Club Drive
Vallejo, CA 94592

Dear Mr. Moore,

Subject: Draft Environmental Impact Statement (DEIS), US Forest Service (USFS), Lake Tahoe Basin Management Unit (LTBMU), Land and Resource Management Plan, Updated Forest Plan, Implementation, Alpine, El Dorado, Placer Counties, CA and Douglas and Washoe Counties, NV

The Department of the Interior has received and reviewed the subject document and has the following comments to offer.

Emerald Bay National Natural Landmark
The National Park Service (NPS) has determined that there would be no impacts to the Emerald Bay National Natural Landmark (NNL). Overall, there would be a positive effect on the ecology of the environs of Emerald Bay NNL in comparison with the existing Forest Plan. For further information about the NPS NNL program, please contact Steve Gibbons (steve_gibbons@nps.gov), National Natural Landmarks Coordinator at (360) 854-7203.

Pony Express National Historic Trail
The Lake Tahoe Basin Management Unit (LTBMU) is traversed by a segment of the Pony Express National Historic Trail (NHT). The NPS National Trails Intermountain Region office has reviewed the Land and Resource Management Plan, Updated Forest Plan implementation project documents and maps.

Approximately 10 miles of the designated Pony Express NHT route lies on the Lake Tahoe Basin Management Unit (see attached map), yet NPS finds no mention of the presence of the trail in the DEIS. The Pony Express NHT route was designated by Congress in 1992. It is

possible that much of the route has been built or paved over, but several sections on the south end of LTBMU appear to lie in relatively undisturbed areas and could therefore potentially be identified. There are several markers commemorating the trail near Lake Tahoe, including one on the eastern edge of South Lake Tahoe at the site of Friday's Station.

NPS recommends that (1) the presence of the Pony Express NHT on LTBMU be identified in the plan, and that (2) the management requirements and goals for National Register listed sites or Heritage Priority Assets be described.

Additional Concerns and Questions

NPS has the following concerns and questions:

- Are there any plans for NHPA Section 110 surveys, since project inventory opportunities are said to be exhausted?
- Is there any interpretive potential that could be developed at any of the Heritage Priority Assets?
- Are there research opportunities available on LTBMU that might be attractive to academia you can pursue?
- Are any preservation oriented Passport in Time projects planned for the future, as in years past?

NPS believes that the National Register sites and Heritage Priority Assets, as well as the Pony Express NHT, should be actively managed and protected during, and after, the NHPA Section 106 compliance process. NPS would be glad to assist staff with regard to the Pony Express NHT, including providing GIS data showing the designated location of the trail and other information if it would facilitate the planning process. Please contact Michael Elliott (michael_elliott@nps.gov), Cultural Resource Specialist at (505) 988-6092 for further assistance.

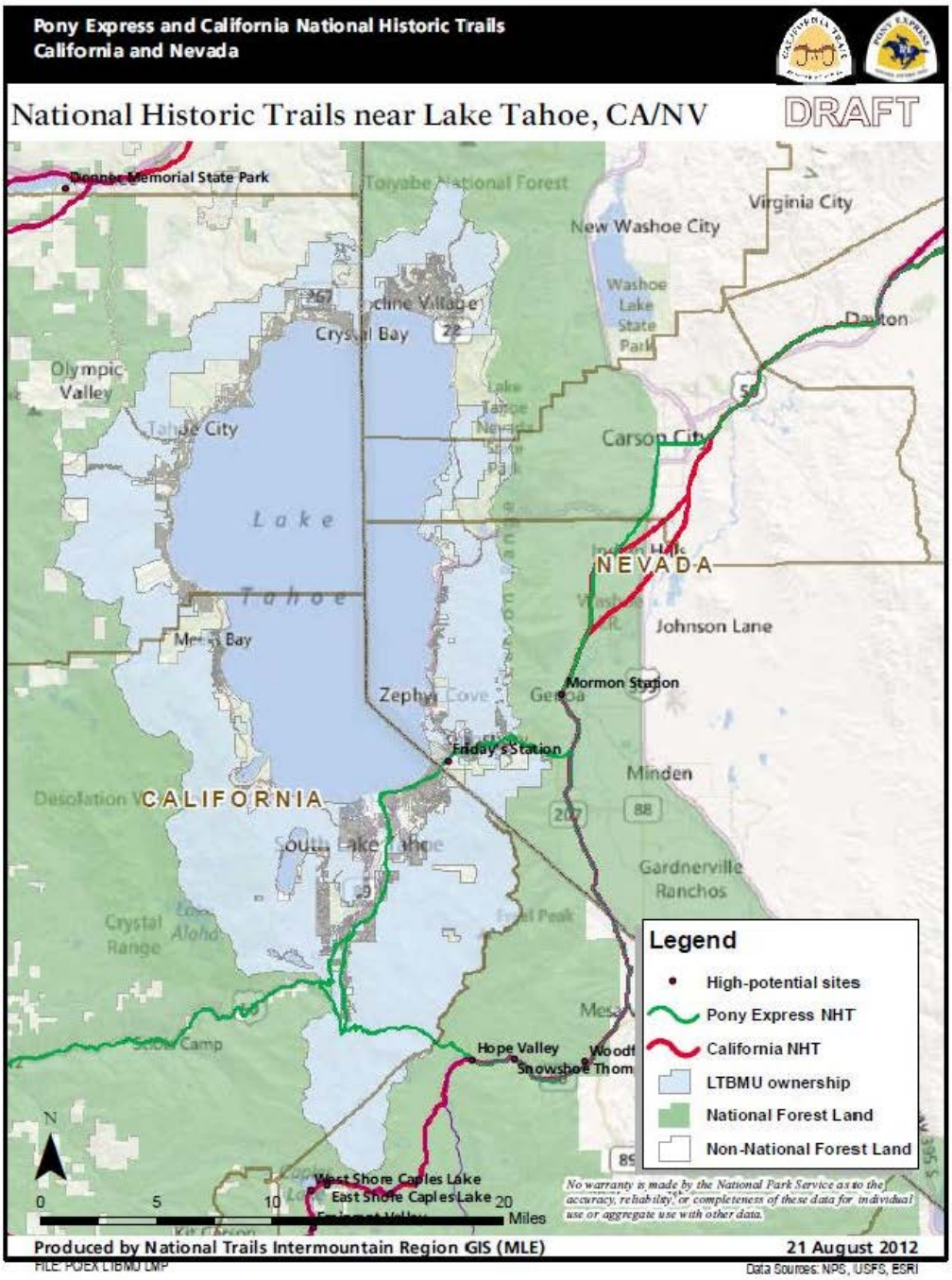
Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement for the Lake Tahoe Basin Management Unit.

Sincerely,

Patricia Sanderson Port
Regional Environmental Officer

Cc:
Director, OEPC
Lisa Chetnik Treichel, OEPC staff contact
Regional Director, NPS

Attachment


Pony Express and California National Historic Trails
California and Nevada
National Historic Trails near Lake Tahoe, CA/NV
DRAFT
Donner Memorial State Park
Tahoe National Forest
Virginia City
New Washoe City
Washoe Lake State Park
Dayton
Olympic Valley
Tahoe City
Carson City
Lake Tahoe
NEVADA
Johnson Lane
Mormon Station
Zephyr Cove
Friday's Station
Minden
CALIFORNIA
Gardnerville Ranchos
Crystal Range
Hope Valley
West Shore Caples Lake
East Shore Caples Lake
Legend
High-potential sites
Pony Express NHT
California NHT
LTBMU ownership
National Forest Land
Non-National Forest Land
N
0 5 10 20 Miles
No warranty is made by the National Park Service as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
Produced by National Trails Intermountain Region GIS (MLE)
21 August 2012
FILE: POEX LTBMU DMP
Data Sources: NPS, USFS, ESRI

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

AUG 2 8 2012

Nancy Gibson
Forest Supervisor
Lake Tahoe Basin Management Unit
35 College Drive
South Lake Tahoe, CA 96150
Attn: Draft Land Management Plan

Subject: Draft Environmental Impact Statement for Lake Tahoe Basin Management Unit Draft Revised Land and Resource Management Plan, CA and NV, (CEQ# 20120168)

Dear Ms. Gibson:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (EIS) for the Lake Tahoe Basin Management Unit (LTBMU) Land and Resource Management Plan pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

The draft revised Land Management Plan (Forest Plan) proposes desired conditions, objectives, standards and guidelines for ecological, social, and economic sustainability. LTBMU lands encompass 154,000 acres of the Lake Tahoe region, which is about 78% of all lands in the Lake Tahoe Basin. The Forest Service's preferred alternative, Alternative B, does not significantly change the management course set in the 1988 Forest Plan, but does address more recent concerns such as climate change, and reflects current science and contemporary recreation demands.

Since the Forest Plan will likely not be amended again for many years, it is essential that this revised Plan incorporate efforts to reduce fine sediment and nutrient loads consistent with the technical information developed to support the Lake Tahoe Total Maximum Daily Load (TMDL) adopted by the States and approved by EPA, in 2011. EPA commends the Forest Service and Lahontan Regional Water Quality Control Board for their efforts to address fuel loads and forest health in the wildland-urban interface. Of note are the design measures and best management practices included in the Forest Plan strategies to reduce adverse impacts and meet soil, watershed and water quality, and wildlife, fisheries, and aquatic habitat objectives. The intent of our comments is to ensure that the Forest Plan is both effective and consistent with efforts to restore the historic clarity of Lake Tahoe, including the requirements of the TMDL for reducing loadings of fine sediment particles and nutrients into the Lake.

We have rated the Draft EIS as Environmental Concerns – Insufficient Information (EC-2) (see enclosed "*Summary of Rating Definitions*") due to our concerns regarding TMDL implementation and water quality monitoring (identified in the attached Detailed Comments). In light of these concerns, we recommend the Forest Service include strong and specific language to ensure TMDL load reduction targets are met, as well as emphasize load reduction in the monitoring plan and consider modeling specific project impacts. Although we acknowledge that some water quality concerns will be addressed

on a project-by-project basis, we believe a holistic monitoring effort will best ensure that the Forest Plan will help attain the Plan's objective of achieving LTBMU's load reduction targets (Objective 1, Draft LMP, Vol II, p. 48).

Please note that starting October 1, 2012, EPA Headquarters will not accept paper copies or CDs of EISs for official filing purposes. Submissions on or after October 1, 2012 must be made through EPA's new electronic EIS submittal tool: *e-NEPA*. To begin using *e-NEPA*, you must first register with EPA's electronic reporting site - https://cdx.epa.gov/epa_home.asp. Electronic filing with EPA Headquarters does not change the requirement to submit a hard copy to the EPA Region 9 Office for review.

We appreciate the opportunity to review this Draft EIS. When the Final EIS is released for public review, please send one hard copy and one CD to the address above (mail code: CED-2). If you have any questions, please contact me at (415) 972-3521, or contact Stephanie Skophammer, the lead reviewer for this project. Stephanie can be reached at (415) 972-3098 or Skophammer.stephanie@epa.gov

Sincerely,

Kathleen Martyn Goforth, Manager
Environmental Review Office
Communities and Ecosystems Division

Enclosures: Summary of Rating Definitions
Detailed Comments

cc: Patty Z. Kouyoumdjian, Lahontan Water Board
Doug Cushman, Lahontan Region, CA Regional Water Quality Control Board
Mike Vollmer, Tahoe Regional Planning Agency
Jason Kuchnicki, Nevada Division of Environmental Protection

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

EPA DETAILED DEIS COMMENTS ON THE LAKE TAHOE BASIN MANAGEMENT UNIT DRAFT REVISED LAND AND RESOURCE MANAGEMENT PLAN, CALIFORNIA AND NEVADA, AUGUST 28, 2012

Access and Travel Management

In the Access and Travel Management (ATM) section, it is unclear the extent to which the new and expanded administrative roads required to implement fuels reduction/wildfire prevention projects are to be included (p. 3-12). On p. 3-482, the Draft EIS states that roads of vegetation management projects constitute the most significant risk to water quality from those projects. Is the management (including implementation and maintenance of BMPs and/or design measures) and de-commissioning or obliteration of such roads considered a part of the ATM program? If so, this should be explicitly stated and sufficient program resources should be allocated to achieve the Total Maximum Daily Load (TMDL) and Land Management Plan (Forest Plan) objectives of no increased loading from subwatersheds in which fuels reduction projects are implemented (over the life of the plan).

There is minimal connection to the specific ATM objectives set forth in the Forest Plan. For example, a strategy indicated in the plan states that "road management decisions are prioritized based upon public benefit and ability to eliminate deferred maintenance" (DEIS, Vol II, p.66). What are the consequences for deferring maintenance on forest access roads for fuel management projects? The consequences of these strategies should be explored in the Draft EIS in the ATM section.

The discussion in Sec. 3.4.1.3, Environmental Consequences of Vegetation & Fuels Management (p. 3-20) does not adequately address the potential impacts of new, expanded and more intensively used roads as a result of fuels reduction projects, particularly under Alternative C which includes a greater emphasis on mechanical thinning. What kind of monitoring of project impacts will be conducted, what triggers will be used to determine whether increased loading is occurring, and what mitigations will be employed to address this impact?

If insufficient resources and attention are devoted to internalizing mitigation measures into fuels projects, it is likely that costly retrofitting, rehabilitation and restoration work at a later time (but likely within the planning horizon) will be necessary to achieve TMDL load allocations, which not only call for no net load increases in every forest uplands subwatershed, but an overall 12% reduction in fine sediment loading (p. 3-485) from the vegetated land use category within 15-20 years.

Recommendation:

Please clarify what roads and trails are in the ATM plan and identify the roads and trails that may be a part of fuels treatment projects.

Please include projections for the miles of roads and trails that will be added as a result of Alternative B. If this is quantified somewhere else in the document, please reference it here. If these are linked to the objectives, please state the objectives more clearly here (p. 66 of the Forest Plan).

If any miles of roads or trails are added as a result of fuel reduction targets that are presented in this plan, please discuss how they will or will not be managed so as to contribute to meeting the 12% reduction in fine sediment loading for the Basin.

Water Quality

Fine Sediment Loads

The proposed Forest Plan revision must acknowledge the need to significantly reduce anthropogenic loads from all LTBMU sources. The Forest Plan revision should specify actions for aggressively treating LTBMU lands to ensure the forest upland sources, on a basin wide scale, reduce fine sediment pollutant loads by 12 percent within twenty years and ultimately by 20 percent overall. The LTBMU's urban land uses must significantly reduce loads in addition to reduced loads from the forested uplands.

EPA is pleased to see that Objective 2 discusses specific water quality objectives of the Forest Plan including 95% implementation of BMPs and the goal to achieve load reduction targets (DEIS, Vol II, p. 48). The Forest Plan must be amended to include a requirement for the LTBMU to develop and implement a plan for *how* to achieve the 20-year pollutant load reduction targets. The plan should also include measures to reduce loads from discrete disturbances on the forested landscape (e.g. roads, ski runs, fuels management projects) as well as address pollutant loads from stream channel reaches managed by the LTBMU. EPA joins with staff from the Lahontan Water Board in looking forward to working with LTBMU staff to develop a viable pollutant load reduction plan and reporting component, and in offering our support to the LTBMU in evaluating and reporting on annual accomplishments toward meeting load reduction needs.[1]

> ***Recommendations:***
> The Forest Plan revision should specify actions for aggressively treating LTBMU lands to ensure the forest upland sources, on a basin wide scale, reduce fine sediment pollutant loads by 12 percent within twenty years and ultimately by 20 percent overall.
>
> The Forest Plan should include a requirement for the LTBMU to develop and implement a plan for achieving the 20-year pollutant load reduction targets. The plan should also include measures to reduce loads from discrete disturbances on the forested landscape (e.g. roads, ski runs, fuels management projects) as well as address pollutant loads from stream channel reaches managed by the LTBMU (see also first comment under "Monitoring" below).

TMDL Load Quantification

The Forest Plan articulates a long term vision for LTBMU and a framework for achieving it. As such, EPA considers one of the most significant objectives over the coming 15-20 years to be quantifying the impacts of management actions on pollutant loads to surface waters in the Lake Tahoe Basin, particularly fine sediment and nutrient loads to the Lake and its tributaries. As required by the 2011 Lake Tahoe TMDL, this quantification will help ensure that all TMDL loads and achievement of load and wasteload allocations are tracked and accounted for. Significant resources have been invested in developing tools and protocols to achieve this objective, and EPA considers that, over the life of the Forest Plan, a strategy of targeted and gradually more comprehensive implementation of load quantification is both feasible and necessary.

The Draft EIS states that TMDL milestones are analyzed using, among other indicators or tools, BMPEP scores and WEPP analysis (p. 3-467). A recent study conducted by the Lahontan RWQCB and EPA, entitled: "Modeling Report: Lake Tahoe Fuels Reduction Strategy," (Tetra Tech, March 30, 2012),

[1] December 5, 2008 letter from Harold Singer, Executive Officer, California Regional Water Quality Control Board, Lahontan Region; to Terri Marceron, Forest Supervisor, Lake Tahoe Basin Management Unit.

employed WEPP in conjunction with the TMDL's Watershed Model (LSPC) to estimate potential sediment loading impacts from implementation of the Multi-Agency Fuels Reduction Strategy.

The analysis, which was based on LTBMU's WEPP modeling of the Ward Unit 5, Heavenly SEZ and Roundhill projects, showed that implementation of the Fuels Reduction Strategy could have the following impacts on total and fine sediment loading as compared with the estimated TMDL baseline forest upland load:

Table 7-2. Lake Tahoe Watershed Model Sediment Loads for the Baseline and Implemented Fuels Strategy Conditions

		Sediment load (tons/yr)		Percent change (Total sediment load)		Percent change (Fine sediment load[1])	
Project area	Baseline	Literature	Revised	Literature	Revised	Literature	Revised
South Shore Project	155	190	312	+22.2%	+101.2%	+0.09%	+0.15%
Basinwide Projection	18,172	20,957	24,637	+15.3%	+35.6%	+10.1%	+11.7%

1. Fine sediment is defined as particles less than 16 micrometers in diameter.

The 12% potential increase in FSP loads as a result of implementing the basin-wide fuels strategy (which is largely due to the use of mechanized treatments such as whole tree skidding) contrasts with the 12% reduction required by the TMDL by 2026 (6% reduction is required by 2016 and 9% by 2021; see Table 10-1 of the Lahontan RWQCB TMDL Report).

EPA acknowledges the analysis used conservative assumptions and that there are uncertainties regarding the extrapolation from small-scale WEPP modeling to a basin-wide analysis. However, the results of this study underscore the need for greater attention to be paid to measuring total and fine sediment loading impacts from fuels reduction projects than has been the case to date and is committed to in the Draft EIS. It is encouraging to see the statements on p. 3-471 that "USFS will be required to report annually on actions taken to achieve TMDL milestones" and that "the Forest … will continue to adapt its monitoring program to provide better information to inform and validate the parameters used in the TMDL model related to Forest Management activities."

Furthermore, the discussion of road and trail monitoring and modeling on p. 3-473 – 3-474 demonstrates the feasibility of conducting an analysis that both quantifies sediment loading and identifies the most sensitive places and cost-effective efforts (largely to reduce hydrological connectivity) to achieve further load reductions. Given that the Tetra Tech report cited above concludes that the management efforts most likely to cause TMDL load increases are roads and landings associated with mechanized thinning, especially whole tree skidding, and the relatively limited occurrence of this practice currently planned, it appears that monitoring and modeling efforts should be focused here, with the objective of producing a similarly comprehensive analysis to the Forest's 2007 evaluation of road and trail retrofits implemented from 2003-2005.

Recommendations:

The Final EIS should discuss how roads and landings associated with fuel reduction projects will be monitored and modeled to achieve TMDL targets.

The final Forest Plan should include a requirement for LTBMU to develop a monitoring and modeling plan in order to, by the end of the planning period (20 yrs), comprehensively quantify TMDL loads from LTBMU lands (forested and urban) since 2004. See "Monitoring and Modeling of SEZ Restoration Projects" and "LTBMU Urban Facility Stormwater Loading" sections below for additional comments concerning comprehensive TMDL tracking and accounting.

Erosion and Nutrients

In the discussion of nutrient loading from forested non-urban sources—which are proportionately double (for nitrogen, 18%) and nearly three times (for phosphorus, 32%) the relative contribution of forested areas to fine sediment loading (9%)—it should be stated that nearshore water quality is likely more affected by nutrients than by fine sediment, and therefore greater measures to reduce nutrient loading may be necessary to protect nearshore water quality than may be required to achieve desired pelagic lake clarity conditions.

Recommendations:
The Final EIS should discuss the measures that may be necessary to reduce nutrient loading from forested non-urban areas.

The final paragraph of page 3-479 states that stream channel erosion represents 2% of the total baseline fine sediment load to Lake Tahoe presented in the TMDL; the correct value is 4% (TMDL Report, p. 7-3).

EPA agrees with the statement that "Current TMDL targets [presumably of the Blackwood Creek bedded sediment TMDL] also need to be incorporated into the new Forest Plan," but seeks clarification on how this will be done (p. 3-480).

Monitoring and Modeling of SEZ Restoration Projects

The list of SEZ restoration projects implemented since 2002 is impressive (though not complete in terms of acres treated by the final four projects) (p. 3-479). Furthermore, the monitoring described shows that these projects are being adaptively managed to maximize their effectiveness. EPA recommends that project monitoring and analysis of available ambient water quality data, especially for projects implemented since 2004, should have as an additional objective the estimation/quantification of TMDL loading impacts of those projects. Tools such as the Stream Load Reduction Tool have been developed to add rigor to these estimates, and should be employed where feasible. Although load reductions from the Blackwood, Ward and Upper Truckee River mainstem projects are assumed to be part of the baseline TMDL Implementation Plan, reductions from other projects may be considered to achieve benefits not incorporated in the Plan, and therefore may represent offsets for possible load increases from other sources on LTBMU lands. Such considerations, if backed by a sufficiently rigorous analysis, should be discussed with TMDL management agencies. EPA would be pleased to participate and assist in these discussions.

Recommendation:
EPA recommends that project monitoring and analysis of ambient water quality data should have an additional objective incorporated into the Forest Plan for the estimation and quantification of TMDL loading for those projects.

On page 3-472, the Draft EIS describes soil erosion monitoring through the BMPEP. Although self-monitoring is a welcome addition, it does not represent the only source of information concerning LTBMU BMP deployment and effectiveness. External information sources such as that provided in Lahontan RWQCB Notices of Violation (NOVs) should also be included. The number and seriousness

of NOVs represents another (more independent) means of evaluating the performance over time of LTBMU's BMP program.

Recommendation:
External information sources for soil erosion monitoring should also be included.

EPA appreciates and agrees with the discussion of vegetation management, stream restoration, and their relationship to TMDL implementation, including reporting and tracking (p. 3-485). We request that the Forest Service provide further details concerning how monitoring will inform TMDL reporting and tracking, specifically how it can provide estimates of model parameters that may be used to quantify TMDL loading values associated with actions taken to address these two source categories.

Recommendations:
The Final EIS should provide further details concerning how monitoring will inform TMDL reporting and tracking.

Watersheds

EPA appreciates the informative discussion of HUC 6 and 7 watershed conditions in Sec. 3.4.24 (p. 3-498). We also appreciate the Forest Service's goal that "…at the programmatic scale all the alternatives propose actions that would maintain or improve current watershed condition ratings" (p. 3-499). This is predicated on the assumption that BMPs are fully implemented and effective, which even LTBMU's BMPEP has shown is not always the case. The current Regional and Forest target is 100% implementation of BMPs and 90% effectiveness ratings (p. 3-473).

LTBMU's watershed condition assessments should be coordinated with implementation of the California Rapid Assessment Methodology (CRAM) currently under development, to avoid duplication. EPA appreciates mention in the Draft EIS of CRAM (p. 3-531), and considers that there may be synergies between these two programs that should be explored by the respective agencies implementing them.

Recommendations:
Our suggested addition to Sec. 3.4.21[sic].2 is to the discussion of Heavenly Valley Creek on p. 3-498. This discussion should refer to the Heavenly Valley Creek TMDL, and the status of implementation.

Measures that will improve the rate of BMP implementation and effectiveness to 100% in both categories should be proposed and included in the Forest Plan.

The watershed condition assessments should be coordinated with implementation of the CRAM.

The discussion of cumulative water quality and watershed condition effects should be updated to reflect the 2011 TRPA Threshold Evaluation that is now available (http://www.trpa.org/default.aspx?tabid=174), although the updated information may not materially affect the conclusions reached concerning threshold attainment (p. 3-529).

LTBMU Urban Facility Stormwater Loading

Although not described in the Forest Plan or its Draft EIS, LTBMU's urban facilities, including administrative and recreational structures, contribute to the Lake Tahoe TMDL urban stormwater source category load. These facilities—including, as appropriate, the catchments in which they occur--should be analyzed and TMDL pollutant loading from them should be provided to the appropriate local stormwater jurisdictions at some point during the 15-20 year planning horizon. The Lake Clarity Crediting Program (LCCP) provides the tools (including the Pollutant Load Reduction Model and associated BMP and Road Rapid Assessment Methodologies) to conduct this analysis. Ideally, affected urban stormwater jurisdictions should take the lead in identifying catchments that include LTBMU facilities for priority analysis, and LTBMU's analysis should be coordinated with the LCCP work being conducted by those jurisdictions.

The optimal approach would be for the LTBMU to develop an urban-focused stormwater management plan for its developed areas in cooperation with affected public and private stakeholders. Developed, urbanized areas within the LTBMU jurisdiction likely include campgrounds, visitor areas, maintenance yards, and other facilities where impervious coverage exceeds one percent. The LTBMU stormwater master plan would ideally describe projects and activities (both completed and planned) needed to reduce pollutant loading from these urban stormwater runoff sources.

> ***Recommendation:***
> In the Final EIS, EPA recommends that the Forest Service discuss how management of LTBMU's urban facilities will contribute to achievement of the Lake Tahoe TMDL urban stormwater source category wasteload allocations.

Air Quality

We recognize the challenge the Forest Service faces by implementing a management plan that will rely heavily on prescribed burns and other fuel management activities to achieve restoration objectives. We understand the predicament Forest Service is in regarding balancing short and long-term impacts related to air quality and the pollutant and air toxics emissions.

Pages 3-61 through 3-65 quantify and compare the emissions from prescribed fire and wildfire. However, this section is very unclear and appears disconnected from the analysis in Fire and Fuels section (3.4.10) and Forest Vegetation section (3.4.11). Page 3-61 states that "emissions are projected through five periods with each period consisting of ten years" but the next sentence reads, "the analysis focuses on emissions from the first period of 10 years under each alternative." There is no reference to which projects are projected to be implemented for the analysis, for example, are fuel reduction activities from the South Shore project included in this comparison? How is this related to the Forest Plan objective that LTBMU reach a goal of prescribed burning of 1,800 acres per year in the wildland urban interface (Objective 6, DEIS, Vol II, p. 51).

The prescribed burning total pollutant emissions are almost twice that of wildfire according to the tables (table 3-13 and table 3-14) although may be one fifth according to the figures (p. 3-61, figure 3-20 and 3-21). What assumptions are inherent in this study? Does this assume fuels treatments are effective? More discussion is warranted to explain the discrepancy in figures and tables.

Recommendation:
We recommend that the Forest Service implement BMPs and work with the interagency Smoke Management Group to reduce emissions from prescribed burns and wildfires to the greatest possible extent and incorporate this into specific objectives in the Forest Plan. If these are in the Forest Plan, then they should be described completely and accurately in the Air Quality section of the EIS.

Please clarify why prescribed burning emissions are between about twice to over four times that of wildfire emissions. Clarify the discrepancy between the tables and figures, and provide further information regarding the assumptions and data that are used to derive the conclusions.

EPA is encouraged by the mitigation measures mentioned on pages 3-35 and 3-36 regarding biochar and black carbon. Research on low temperature pyrolysis to make biochar has shown it to be an effective measure in improving the structure and fertility of soils and may decrease fertilizer runoff (p. 3-36) and it is important for the Forest Service to consider the feasibility of such measures in the future. EPA could not find where biochar and the other technologically emerging mitigation measures are mentioned as an objective, strategy, or design criteria in the Forest Plan.

Recommendation:
Consider how mitigation measures for black carbon and greenhouse gases can be incorporated into the Forest Plan.

Grazing and Rangeland Health

Grazing use can significantly affect the functional condition of wetland and riparian areas over the long term by increasing erosion, compaction, sedimentation, and runoff rates. These impacts lead to changes in channel geomorphology and water quality, including increases in temperature, nutrients, fecal coliform, total suspended solids, turbidity, and other contaminants. Grazing is not mentioned in the Forest Plan. The Draft EIS lacks a discussion of grazing allotments in the LTBMU including the Baldwin grazing allotment.

Recommendation:
If it is still occurring, the Forest Service should vigorously manage grazing, especially in riparian and wetland areas that are functioning at risk in a static or downward trend in order to facilitate their recovery. If necessary, please discuss and incorporate protection measures and management actions in the Final Forest Plan/EIS.

Washoe Tribe of Nevada and California

Environmental Protection Department

USFS - Lake Tahoe Basin Management Unit
Attn: Matt Dickinson, Interdisciplinary Team Co-Leader
35 College Drive
South Lake Tahoe, CA 96150

August 30, 2012

Re: Draft Land and Resource Management Plan

To Matt Dickinson:

Thank you for allowing the Washoe Tribe the opportunity to comment on the Draft Land and Resource Management Plan and Draft Environmental Impact Statement for the USFS – Lake Tahoe Basin Management Unit. The Washoe Environmental Protection Department (WEPD) supports the LTBMU's efforts to create a more strategic and less prescriptive forest plan. WEPD supports an approach that will include protection of the cultural and natural resources, management for resiliency to climate change, and addressing aquatic invasive species. WEPD generally supports the current Alternative B as it provides a balanced approach to management while providing for habitat improvement, increased flexibility with forest vegetation and fuels treatments, and protection and enhancement of soil and water quality.

Please ensure that the Special Forest Products and Forest Botanical Products regulations will be recognized in the updated forest plan. WEPD would like to ensure that the cultural resource management will remain as is in compliance with the federal requirements.

The Washoe Tribal Historic Preservation Office (THPO) has reviewed the draft plan and DEIS and is concurrence with the above comments. Please keep us informed on the status of this project. Thank you for providing us with the opportunity to comment. If you have any questions, please contact me at (775) 265-8682 or via email at marie.barry@washoetribe.us.

Sincerely,

Marie Barry

Marie Barry, Environmental Director
Washoe Tribe of NV and CA
Environmental Protection Department

Cc: Darrel Cruz, THPO
Jennifer Johnson, ESII
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Appendix O: LTBMU Effects Analysis

Forest Service planning occurs at three levels: national strategic planning, NFS unit planning (forest planning), and project or activity planning. The LTBMU plan is a NFS forest plan that provides a framework for integrated resource management and for guiding subsequent project and activity planning. The forest plan does not result in direct, physical impacts to the environment, but it may constrain where and how projects or activities can occur. The forest plan does not authorize projects or activities or commit the LTBMU to take action.

Forest plans cover broad geographic areas for a period of 15 years or more. As a result, the environmental impacts resulting from forest plans are removed in time and space because projects or activities guided by the plan occur throughout the 15 year period. Since future events and influences are largely unpredictable, the environmental analysis for forest plans is by its nature somewhat speculative. The analysis methods described in Chapter 3 of the EIS are designed to predict reasonable and consistent environmental impacts for the broad geographic area rather than site-specific impacts normally associated with much smaller areas.

Environmental analyses for forest plans are intended to provide the responsible official with a reasonable estimate of effects taking into account the uncertainty and large geographic scale of a forest plan. Analysis methods are vetted through an interdisciplinary team of specialists and managers using extensive public collaboration and consider the best science available. This process includes a review of the draft documents by Forest Service specialists at the Regional level and final documents by independent scientists. Extensive public input is solicited through meetings, web input, and public comment on the draft forest plan and DEIS. This process results in a consistent and fair analysis that highlights the important differences between alternatives given the need to project into an unknown future and to do so within the time and budget allowed.

After the LTBMU released the DEIS for public comment, the agency received several comments that requested a more detailed effects analysis. While the agency has added more detail in the FEIS, some members of the public may believe that the effects analysis in Chapter 3 is still too general. Therefore, this discussion has been added to describe the analytical methodology the Forest Service used in preparing Chapter 3 and to explain why a more detailed effects analysis is not practical.

The Unpredictability of Natural Conditions and Human Values Over Time

The effects predicted in the environmental analysis are unlikely to unfold exactly as predicted. There are numerous areas of environmental uncertainty, including: seasonal weather patterns, the scope and intensity of wildfires, the dynamics of bark beetle infestations, the spread of invasive exotic species, and, most significantly, climate change. There have been significant changes in such natural disturbance regimes in recent years, and it is likely that such changes will continue. However, it is extremely difficult to predict the rate and trajectory of such changes, particularly over the long term and with the synergistic impact of climate change. Given that the environmental context for forest plan implementation will be changing over time and in an unpredictable manner, environmental effects can only be predicted based on known values over broad geographic areas. Effects predictions are determined by IDT members who provide expert knowledge about the environment based on applicable scientific papers and their professional understanding of cause/effect relationships for the LTBMU.

Natural conditions and human values are two of the main influences on land management decisions at the project level. However, neither natural conditions nor human values are static. Political priorities and associated funding will change over time and so too will the scope of Forest Service projects at the site-specific level. And, because the agency can only make general assumptions about the direction and magnitude of change in natural conditions or human values, the agency cannot presently forecast with accuracy the exact consequences of implementing forest plan alternatives in the future.

Given the uncertainty of future events, attempts to provide greater detail will not result in any better prediction of environmental effects. Spending more public money on data and analysis would do little to improve effects predictions since more money cannot improve prediction of the inherent variables in the system.

Further, our knowledge base is improving all the time and forest plan guidance is expected to change as we adapt to changes in climate, best available science, and public demand Over time, plan amendments are expected as more is learned through the project planning process, research and monitoring activities.

The Analytical Methodology Employed in Chapter 3 of the EIS

While analytical methods vary by resource area, each resource uses a set of resource-specific indicators to structure the analysis. Also included are a set of assumptions specific to the resource, while assumptions common to all resources are described at the beginning of Chapter 3. Where models are used, they are identified and their limitations are disclosed.

For each topic in Chapter 3, the analytical methodology described is the most appropriate methodology the agency is aware of. While certain members of the public requested a more detailed effects analysis, which would include more forecasting of the physical effects of the various alternatives on the environment, none of those individuals or groups proposed any practical or reliable analytical methodologies. Therefore, based on the agency's extensive history, experience, and technical expertise in conducting effects analyses, collaborative public involvement, science reviews and the lack of other practical solutions, the agency employed the various methodologies described in Chapter 3 of the EIS, recognizing its limited ability to predict specific, future, physical impacts to the environment. These methodologies, while admittedly limited, strike a reasonable balance between forecasting reasonable broad-scale estimates of environmental consequences without drifting into the realm of unreasonable speculation.

The Uncertainty and Risks Associated With Forecasting Environmental Effects

There are several factors that influenced the agency's decision to adopt the methodologies described in Chapter 3 of the EIS. These are as follows:

The Forest Service's Staged Decision-Making Process

The Forest Service engages in a two-step decision-making process where general guidance and direction is provided at the forest plan level, and concrete commitments are made at the project level. This process is known as "tiering" where the forest plan addresses broad program-level questions of a general nature and the site-specific projects address direct effects of specific actions. In this sense the project "tiers" to the decision made in the forest plan since project scope is constrained by the forest plan (see the Council on Environmental Quality NEPA regulations at 40 CFR 1508.28(a)). None of the decisions made by the LTBMU's forest plan revision have direct environmental impacts. Rather, only at the site-specific, project level is it possible to determine with a high level of certainty if an irreversible and irretrievable commitment of resources is proposed and an analysis of actual expected physical effects generated. Given there are no direct impacts to the environment from this plan revision, it is difficult to predict, with precision the environmental consequences that might flow indirectly from the adoption or revision of a forest plan.

This explanation should not be construed to mean that the Forest Service's decision-making structure avoids the analysis and disclosure of environmental effects. Rather, it is meant to clarify that certain stages of the decision-making process are more amenable to predictive, and useful, analysis. At the plan level, preparing a detailed and accurate effects analysis is problematic, since there remains great uncertainty about the scope and intensity of site-specific actions to be implemented pursuant to the forest plan. Only when site-specific decisions are being considered does the agency have sufficient details about land-management activities to engage in reasonably accurate predictive analysis. And, that is the stage where the bulk of Forest Service NEPA effects analysis has occurred and will continue to occur. Therefore, while the EIS does attempt to provide some projections of the environmental consequences of the various forest plan alternatives, the early stage of a forest plan in the agency's two-step decision-

making process precludes the type of detailed effects analysis that several commenters requested. At the forest plan level appropriate analysis considers the relative contributions of plan components of each alternative toward achieving desired future conditions.

Forest Plans do not grant, withhold or modify any contract, permit or other legal instrument and do not authorize projects or activities

All of the alternatives considered in the EIS do not commit the Forest Service to take any particular action at any particular time. Each alternative includes a combination of general goals and specific constraints, but leaves all decisions that cause direct environmental effects to the project level. The agency believes that retaining broad decision-making space at the project level is appropriate for several reasons, including: the variability of terrain and ecotypes within the LTBMU; the unpredictability of natural systems over time; and the ever-changing state of scientific knowledge related to natural systems and the management thereof. Based on these and other factors, the LTBMU concluded that a revised plan would be the most successful if it were flexible and could adapt to varying conditions in space and time.

The plan establishes direction through desired conditions, objectives, land allocations, suitable uses and standards and guidelines that both guide and establish boundaries for Forest Service line officer discretion at the landscape level. This allows meaningful evaluation of environmental impacts at the scale of an entire National Forest. Further, the plan allows considerable management discretion at the project level. Individual line officers may opt to make decisions at the limit of what is permitted by the forest plan's Standards and Guidelines; in other cases, individual line officers may opt to exercise their discretion by acting well below such limits. Available budgets and skills may limit what is possible. The collaborative process used to develop site-specific projects may result in improved local knowledge, expertise, and values included in the decision-making process. So better decisions are made, which promote ecological and social sustainability in ways that a Forest-level plan could not anticipate.

Although such discretion prevents us from accurately predicting environmental consequences at the project level at the time of plan revision, the "roadmap" established by forest plan direction is sufficient to determine reasonable cause and effect relationships for gauging meaningful differences between alternatives and their environmental effects. Given the broad latitude for collaborative decision-making at later stages in the decision-making process, the Forest Service cannot now reasonably predict what the results of such decision-making will be.

The Forest Service's multiple-use mandate under the Multiple-Use Sustained-Yield Act and National Forest Management Act is quite broad and was designed to accommodate a wide array of uses, depending on the prevailing values within and outside the agency. The forest plans are designed to be flexible and adaptable to changes in natural conditions, social conditions and human values over time. Therefore, the balance between the multiple uses – recreation, watershed protection, grazing, timber harvest, wildlife protection, mining, etc. – is likely to fluctuate over time, resulting in different environmental impacts as that balance changes. Plan amendments and revision will be conducted with the appropriate NEPA procedures and public collaboration.

The Risk of Speculation

While some members of the public would like to see more detailed effects analysis in Chapter 3, that is not its purpose. Specific and detailed effects analyses are an outcome of projects and activities that comply with this plan will be subject to NEPA analysis when and where subsequent projects are proposed. Site-specific project proposals are readily analyzed in detail whereas the effects of the proposed

management plan and alternatives in this EIS are necessarily broad scale approximations based on a variety of assumptions.

The analytical methodology employed in Chapter 3 is intended to highlight the differences between alternatives with respect to many different issues. Since the effects of this decision will be felt for many years to come, it was necessary to forecast various trends and conditions based on past and current observations. In order to provide meaningful estimates of effects, making some assumptions is necessary, however the Forest Service refrained from over-reaching in this regard by striking a reasonable balance that provides information useful to the public and agency decision-makers without engaging in speculation that might convey a level of certainty regarding environmental effects that was misleading. Any attempt to portray effects in more detail would be highly speculative and misleading to the public.

In the end, the agency tried to strike a reasonable balance, where Chapter 3 of the EIS would provide information that would be useful to the public and the agency decision-makers, without engaging in speculation that might convey a level of certainty regarding environmental effects that was illusory.